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# REPORT RESUMES

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EFFECTS OF COLLEGE UPON STUDENT ASPIRATIONS.
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THE MAJOR OBJECTIVES WERE TO IDENTIFY THE TYPES OF COLLEGE ENVIRONMENTS WHICH STRENGTHEN OR WEAKEN UNDERGRADUATES' DISPOSITION TO SEEK ADVANCED TRAINING AND TO FORMULATE STEPS WHICH COLLEGE ADMINISTRATORS OR FACULTIES MIGHT TAKE TO ENCOURAGE TALENTED STUDENTS. A PANEL OF APPROXIMATELY 2,000 COLLEGE STUDENTS WAS SURVEYED AT THE BEGINNING OF COLLEGE, AT THE END OF THE SOPHOMORE YEAR, AND AGAIN AT THE COMPLETION OF COLLEGE. MULTIPLE REGRESSION EQUATIONS WERE DEVELOPED FOR PREDICTING TERMINAL DISPOSITIONS TO SEEK ADVANCED GRADUATE OR PROFESSIONAL TRAINING FROM EIGHT PRECOLLEGE CHARACTERISTICS. DISCREPANCIES BETWEEN PREDICTED AND OBTAINED CRITERION SCORES WERE USED AS INDEXES OF CHANGES IN DISPOSITIONS. THESE INDEXES WERE CORRELATED WITH MEASURES OF COLLEGE ENVIRONMENTS AND REPORTED EXPERIENCE DURING COLLEGE. THE FOLLOWING HYPOTHESES WERE CONFIRMED--(1) DISPOSITIONS TO SEEK ADVANCED GRADUATE TRAINING ARE STRENGTHENED BY EXCELLENT TEACHERS OR ROLE MODELS IN THE STUDENT'S MAJOR FIELD OF STUDY, UPPER CLASS STUDENT SUBCULTURES CHARACTERIZED BY A STRONG PRESS FOR INTELLECTUALISM OR LARGE PROPORTIONS OF PEERS PLANNING TO SEEK ADVANCED DEGREES, MAJOR FIELD TEACHERS WHO PROVIDE POSITIVE EVALUATIONS OF THE STUDENT'S ABILITY, HONORS PROGRAMS OR GRADUATE-LEVEL COURSES AS UNDERGRADUATES, UNDERGRADUATE PARTICIPATION IN RESEARCH PROJECTS, AND SOCIAL RECOGNITION OR EXPERIENCE OF WINNING HONORS OR AWARDS, AND (2) DISPOSITIONS TO SEEK ADVANCE STUDY WERE WEAKENED BY TEACHERS WHO EITHER DEMAND STRICT COMPLIANCE WITH COURSE OR CURRICULAR REQUIREMENTS OR WHO STRESS THE PRACTICAL OR VOCATIONAL VALUES OF EDUCATION, AND STUDENT PEER GROUPS EXERCISING STRONG PRESS TO PARTICIPATE IN PLAY OR SPECTATOR ACTIVITIES. (HB)

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# EFFECTS OF COLLEGE UPON STUDENT ASPIRATIONS

Cooperative Research Project No. D-098

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Nashville, Tennessee

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# CHAPTER I

# INTRODUCTION

There are both practical and sound scientific reasons for studying the effects of different learning environments upon motivation for scholarly and scientific achievement.

Because the first big post-war birth cohort group is now approaching college age and because the rate at which college-age students attend college has been steadily rising, American colleges and universities face the immediate prospect of a 50 per cent increase in the number of full-time college entrants during the next decade (Conger, 1962). Such drastic increases in the enrollments of college students have many implications. Higher education must not only find the resources to increase its physical facilities; it must also recruit and train college teachers at a rate unprecedented in the history of American education. Moreover, our graduate schools must expand at a faster rate than undergraduate colleges, if only for the sake of providing the teachers that the expanding undergraduate enrollment will demand. Despite the urgency of our need to recruit large numbers of college teachers there is little research to tell us what we want most to know: How can we increase the supply of trained college teachers? What factors facilitate or impede plans for postgraduate study? How can we manipulate or modify college environments to increase the student's motivation to seek advanced training?

Justification for inquiry into the influence of college environments upon the achievement motivation of students may also be derived from recent developments, both empirical and methodological, which indicate the feasibility of making research on such problems considerably more definitive than was hitherto possible. For one thing, as we shall show in the following survey of related studies, considerable progress has been made in identifying the pre-college predictors of the college graduate's plans to seek advanced training. As a consequence it is now possible to design studies of the effects of college which control more of the relevant pre-college variables, thus making interpretation of the results less hazardous. A second factor is the recent development of methodologies appropriate for such investigation. Several investigators have recently employed multiple regression (Thistlethwaite, 1963) and actuarial (Astin, 1962a, 1963a) modes of analysis in testing hypotheses about the effects of college upon student aspirations. There is in fact a formidable armamentarium of powerful research designs (Campbell, 1963; Campbell & Stanley, 1963) now available for testing such hypotheses, and it is reasonable to expect that more investigators will be attracted to such research.

The following section reviews previous studies which bear upon the problem we have set for our inquiry.

## Survey of Related Studies

Studies of the effects of college upon motivation for scholarly or scientific achievement may be classified into three modes of analysis: In the first, which may be called a "retrospective analysis," students who enroll in graduate or professional schools (or who become college teachers) have been asked to retrospectively recall experiences which influenced their career plans. In the second, which may be called a "college productivity analysis," the undergraduate institution has been regarded as the unit of sampling, and an attempt made to describe the characteristics of institutions which are unusually "high" or "low" with respect to their output of students who later obtain advanced degrees or other scholarly rewards. In the third, which may be called an "analysis to find out who changes," the student has been regarded as the unit of sampling, and an attempt made to correlate changes in degree aspirations with actual or reported experiences during college. In the following we shall review the most relevant findings in each of these categories.

Retrospective analyses. The first category of studies consists of analyses in which students or college teachers have been asked to recall types of experiences which influenced their career plans. All of these surveys find some respondents who report that their career decisions were influenced by undergraduate teachers, though the proportion of respondents who mention such teachers as an important influence varies widely from one survey to another. Undoubtedly much of the variation in these results is due to the wording of the specific survey questions and the response alternatives presented.

Gropper and Fitzpatrick (1959) surveyed approximately 2,000 graduate students enrolled in 35 graduate or professional schools. Each student was asked, "What led up to your decision to go to graduate school?" The most frequently mentioned factors were "vocational considerations" (49 per cent), "educational considerations" (21 per cent), and the "influence of people and experiences" (13 per cent). From these results one would judge that teachers had influences upon only a small proportion of students. However teachers were apparently more influential with respect to decisions concerning choice of a graduate field of study, for one-fourth of these students reported that the "influence of faculty members and school experiences" were factors in their decision to enter a particular field of graduate study. Berelson's (1960) survey of 2,300 recent recipients of the doctorate degree asked, "Who particularly influenced you to go to graduate school?", and found that about two-thirds claimed they decided "pretty much on their own." The strongest other influence was the undergraduate teacher, but he was influential in only about 15 per cent of the cases--at least in the judgment of the respondents. In a survey of 1,500 talented college students who had received recognition in a national scholarship competition, Thistlethwaite (1960) found that responses to such questions seemed to vary according to changes in aspirations. When students were asked at the end of the third year of college, "What college experiences have influenced the level of training you plan to reach (e.g., BA, MA, Ph. D. level)?", 54 per cent of the students who said they had raised their aspirations mentioned "a few instructors who inspired me to emulate them," compared with only 13 per cent of those who said they had lowered, and 22 per cent of those who said they had not changed, their aspirations. Experiences which reassured the student of his abilities in his field of study and "challenging and inspiring courses in my intended field of study" were also mentioned much more frequently by those who raised their aspiration levels.

Considerable variation in the amount of influence attributed to undergraduate instructors has been found in analyses of the retrospective reports of college teachers. Gustad (1960) analyzed responses to a survey questionnaire completed by over 1,500 college teachers in Chemistry, English, and Psychology. When asked, "Who do you think most influenced you in your choice of college teaching as a career?", the most frequently checked response was "college teacher." Sixty-three per cent of the respondents employed as college teachers at the time of the survey and 56 per cent of the former college teachers (who had taken jobs in industry), endorsed this alternative, while the percentages checking the next most popular alternative--"Parents"--were 31 and 25 per cent, respectively. On the other hand, Eckert and Stecklein (1961), who surveyed approximately 700 college teachers in 32 Minnesota colleges and asked each how they became interested in college teaching, found that only about one-fourth checked "college teacher recommended it," and about the same proportion, overlapping considerably with the first proportion, said that a "college administrator or counselor encouraged me."

It is clear that while the available survey data indicate that the career plans of some students are influenced by their undergraduate teachers, such data provide little information about the teachers who are most influential, the students who are most susceptible to such influence, or the teacher behaviors which might be effective in strengthening the disposition to seek advanced training.

Studies of college productivity. Most investigators interested in comparing the exceptional "products" of different institutions have recognized that it is desirable to express the frequency of occurrence of these products as a percentage of the institution's graduates. Such percentage rates have been computed for a variety of scholarly and scientific attainments. Prentice and Kunkel (1930, 1931) ranked colleges according to the percentages of their living bachelors who were listed in the 1928 edition of Who's Who in America; Kunkel and Prentice (1939) and Traxler (1957) provided similar rankings based upon later editions of this listing. Kunkel (1941) has published a separate ranking of colleges based upon the percentages of their alumni enrolling in graduate or professional schools. Vishner (1947) ranked colleges according to the number of male graduates per starred alumnus listed in American Men of Science.

The study by Knapp and Goodrich (1952) was the first to suggest the kinds of statistical analyses necessary to tease out the determinants of college differences in the production of scholars and scientists. These investigators defined their index of scientific productivity as the rate per thousand at which male graduates from a given institution in a given span of years (1924-34) continued to the doctorate level in physical and biological sciences. They were cognizant of the fact that an institution's output of graduates who later attain doctorates depends upon the academic aptitudes and vocational aspirations of the students initially admitted to that institution. Thus in an appendix to their main report they demonstrated that the average aptitude test scores of entering classes of 50 colleges correlated .39 with their index of scientific productivity. When they partialed out the influence of scholastic aptitude from the index of productivity there were only two college characteristics significantly related to the residual indexes: minimum cost of attendance and geographical location. Colleges ranking in the middle third with respect to cost, and those located in the Middle and Far West, had the highest adjusted productivity indexes.

However, in most of their analyses Knapp and Goodrich ignored the contamination of their indexes arising from differences in the aptitudes of student bodies enrolled, and erroneously interpreted their unadjusted productivity indexes as measures of institutional effectiveness in stimulating scientific achievement. Thus in discussing the relationship between size of institution and their (unadjusted) productivity indexes they wrote:

> Among the very smallest institutions the rate of production is not particularly high, but it rises to an apparent optimum among institutions graduating from about forty to a hundred and fifty annually. Thereafter the average rate drops off consistently as the size of institutions increases. . . . It appears that above a certain optimum size there is a comparatively rapid falling-off of *effectiveness* and that large institutions on the whole yield relatively few scientists (p. 47). (Italics added)

From their own analysis it was clear that their index of scientific productivity, while a perfectly suitable measure of the undergraduate origins of scientists, could not be interpreted as a measure of institutional effectiveness in motivating students to attain the doctorate.

A subsequent study by Knapp and Greenbaum (1953) calculated the rates at which graduates of selected undergraduate institutions later won graduate fellowships or Ph. D.'s. Separate productivity indexes for men and women, and for achievement in the humanities, social sciences, and natural sciences were developed and related to college characteristics. However, since none of these indexes were adjusted for differences in the quality of the student bodies initially enrolled no conclusions concerning institutional effectiveness can be drawn from this study.

By the late '50's the methodological shortcomings of these well-known pioneering studies had been repeatedly discussed in the literature (Heist, 1960; Holland, 1957, 1959; McConnell & Heist, 1959; Stuit, Helmstadter, & Fredericksen, 1956), and it was obvious that the next steps had to consist in the development of productivity indexes which controlled more of the relevant college input variables. The first analysis consistently applying the adjustments necessary for equating colleges with respect to initial talent supplies was reported by Thistlethwaite (1959a). Aptitude test data on 9,600 examinees in the National Merit Scholarship program were used to compute a Talent Supply Index for each of 511 colleges, enrolling 70 per cent of the nation's entering students in 1956-57. This index of the scholastic aptitude of the college's student body accounted for 40 to 50 per cent of the variance in the Knapp-Greenbaum indexes and for 15 per cent of the variance in the Knapp-Goodrich index. A productivity index was defined as the discrepancy between a college's actual rate of producing Ph. D.'s and its expected rate of productivity (as predicted from its enrollment of talented students). Separate productivity measures were computed for Ph. D. production in the natural sciences and in the arts, humanities, and social sciences, and each measure was then related to structural and psychological characteristics of the colleges. Both productivity measures were found to be positively correlated with large numbers of volumes in the college library, geographical locations outside the South, and a lack of Catholic religious affiliation.

A re-analysis of this data for 36 selected colleges at which National Merit examinees had described the expectations and demands (hereafter, called "press") of their college teachers and fellow students was reported by Thistlethwaite (1959b). Productivity in the arts, humanities, and social sciences was positively related to student press for humanism, breadth of interests, and reflectiveness, while productivity in the natural sciences was positively related to student press for scientism and aggression. In addition, colleges with unusually high outputs of graduates who later achieved the Ph. D. in the humanistic fields were seen by student observers as having excellent social science faculties and resources, flexible and somewhat unstructured curricula, energy and controversiality of instruction, and informality and warmth of student-faculty contacts. Productivity in the natural sciences was related to absence of close faculty supervision, relatively nondirective teaching methods, and informality and warmth of student-faculty contacts.

As we have already noted, ability is not the only quality of the entering student body related to a college's productivity, and it is necessary to control additional college input variables before we can speak with confidence about the relative effectiveness of different colleges in stimulating their students to go on to obtain the Ph. D. degree. Astin (1961) carried this logic one step further by adjusting Thistlethwaite's productivity measures to remove differences among entering classes at the 36 colleges with respect to the percentages initially planning to major in the natural sciences and initially aspiring to obtain doctorates. Little confidence can be placed in Astin's estimates of the magnitude of the relationships between college press and productivity, since his computations involved second-order partial correlations based on small numbers of students at a small number of colleges.

Nonetheless, this analysis suggested that when the effects of these two additional input variables are partialed out, correlations between productivity and the psychological characteristics of the environment mentioned above may be reduced in size.

A subsequent study by Astin (1962a) was concerned almost exclusively with relationships between productivity and the structural characteristics of colleges. This study employed a mode of analysis, called "input-output design," based upon actuarial rates at which different categories of a population of students subsequently obtained the Ph. D. Such percentage rates were then applied to the category distributions of a college's entrants, generating a predicted number of the college's graduates who should achieve the doctorate. The college's productivity index was defined as the ratio of actual to expected numbers of the institutions's graduates who attained the doctorate. Productivity indexes for different types of institutions were then compared.[1]

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[1] A simplified example may help to illustrate the logic of Astin's (1962a) method. Assume that sex and aptitude level are the only relevant input variables which we need to control in order to compare 100 colleges with respect to their effectiveness in stimulating their students to obtain the Ph. D. Imagine that we have identified all Ph. D. recipients in a given span of years who had obtained their baccalaurates from the selected colleges and have classified them into the sex X aptitude level categories. Similarly, suppose we next look at the statistics for entering classes at each of these 100 colleges during the span of years when the selected Ph. D. recipients first entered college, and that we classify the pooled data on entering classes for these colleges into the same sex X aptitude level categories. From these two i X j tables it is possible to calculate the probability of obtaining the Ph. D. for students in each cell of the i X j classification (step 1). These probabilities are then

Astin's application of this method was faulty for two reasons: First, he used a post-college attribute (major field of study in which the student obtained his baccalaurate) as if it were a pre-college or input variable. College experiences may be supposed to have effects upon career choices and very likely cause some students to change their intended fields of study. If so, treating terminal field of study as an input variable has the effect of partialing out some of the effects of college. Second, Astin did not take into account the shrinkage in predictive accuracy that can be expected in a cross-validation sample of college students. The logic of this actuarial method is similar to that of predicting a criterion from a multiple regression equation containing each input variable. Since the process of selecting the input variables to be controlled and the weights to be assigned to each capitalizes upon chance factors, we can expect some shrinkage in accuracy of predicting college productivities when the model is cross-validated on new samples of each college's students. In other words we can confidently predict that a spuriously high proportion of the variance in productivity ratios will appear to be accounted for by input variables as long as we look only at results for the standardization samples of students.

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applied to frequencies of entering students in each cell for each college, generating for each college an "expected" number of Ph. D.'s (step 2). Finally, productivity ratios (i.e., the ratio of actual to expected numbers of Ph. D.'s) are computed for each college (step 3).

Astin interpreted the results of his study as "suggesting that colleges do not differ appreciably in the extent to which they stimulate their students to seek higher academic attainment or inhibit them from seeking such attainment." However, the two procedural defects we have noted may explain his negative results. Specifically, these two defects probably had the effect of increasing the likelihood of a Type II error (accepting the null hypothesis when it is false). Such defects are perhaps tolerable when the results lead to rejection of the null hypothesis, but they are serious sources of invalidity when the results lead to acceptance of the null hypothesis. In short, Astin's results (1962a) cannot be interpreted as providing strong evidence against the notion that college productivity is affected by the structural characteristics of the institution.

To summarize, the most frequently expressed methodological precept found in recent college productivity studies is the necessity of controlling differences in student quality among institutions so that comparisons of colleges on the basis of the attainments of their graduates will not merely reflect such initial diversities. Beyond this there is agreement that in order for such comparisons to tell us much about the relative effectiveness of colleges in stimulating scholarly or scientific achievement among undergraduates, we must at least equate college student bodies with respect to scholastic aptitude, sex, initial degree aspirations, and vocational plans. Although there is suggestive evidence that both the structural and psychological characteristics of colleges influence the development of motivation for advanced degrees, none of the positive studies so far reported has achieved control over more than a few of the relevant, college input variables. As a consequence the hypotheses associated with these positive findings cannot yet be theoretically interpreted with confidence.

Analyses to find out who changes. A third type of study, to which we have already alluded, consists in treating the student as the unit of analysis and correlating changes in degree aspirations with actual or reported experiences during the college years. The initial studies in this category used indirect, and somewhat unreliable, measures of change in aspirations: instead of directly computing changes from pre- and post-college measures of aspiration, retrospective reports of perceived changes (Thistlethwaite, 1960) or of initial aspirations (Thistlethwaite, 1962a) were used to define criterion groups. Thus the first of these studies compared the reported college press of students saying that they had increased their aspirations since starting college with that of students saying they had not changed their aspirations. Self-reported increases in aspirations were associated, among students in the arts, humanities, and social sciences, with faculty press for achievement, affiliation, enthusiasm, humanism, and independence, while among students in the natural sciences such increases in aspirations were positively related to faculty enthusiasm, and negatively related to faculty press for compliance. Unfortunately, differences between criterion groups in initial aspirations may have contaminated the apparent effects of college press, since students who reported they had increased their initial aspirations very likely had relatively low initial aspirations, while students who reported they had not changed their plans probably had higher initial aspirations.

In the second study (Thistlethwaite, 1962a) better control over initial plans to enter graduate or professional study was achieved by using covariance analysis in which estimates of initial aspirations (obtained by retrospective recall) were the covariate. Even though there may have been errors in accurately recalling earlier plans there is no reason to believe that such errors systematically biased comparisons between the criterion groups. Estimates of changes in aspirations of women showed virtually no relationship to college press; however, among men such estimates of increases in aspirations were associated with faculty press for independence, supportiveness, and affiliation, and with the absence of faculty press for vocationalism. In addition, participation in college honors programs and exposure to student peers characterized by openness to faculty influence were related to increases in aspirations among men. Astin (1962b) re-analyzed some of the data in this study for a small group of students on which pre-college measures of aspirations were available, and discovered evidence suggesting that some of the estimates of initial aspirations derived from retrospective reports may have been inaccurate. He also questioned the appropriateness of applying covariance analysis to data on degree aspirations. However, an independent, longitudinal study of 2,400 undergraduate men, reported by Thistlethwaite (1962b, 1963) seems to rule out interpretation of these findings in terms of errors of recall or alleged anomalies related to covariance analysis. Students in the new sample reported their aspirations on two separate occasions--at the beginning of college and again at the end of the second year of college--so that diagnosis of change did not depend on the student's recall of earlier plans. Also the data were analyzed by an alternative method requiring none of the assumptions of covariance analysis. The results of this longitudinal study nicely confirmed findings in the earlier study.

In all such studies there is a problem analogous to that of achieving adequate control of college input variables in productivity studies. We cannot argue persuasively that differences in learning environments are causes of differences in the rates at which students change their plans to seek advanced training unless we are able to demonstrate that the groups exposed to different environments were comparable with respect to initial predispositions to seek such training. Interpretation of the results of the longitudinal study just described, for example, is difficult because there is evidence that the groups were not equated with respect to initial predispositions for advanced training. To be sure, the groups exhibiting increases in aspirations had significantly different college press scores, on the average, from those with decreased, or unchanged, aspirations; however, the former also tended to have somewhat higher aptitude test scores, more often had parents who had attended college, and had made proportionately greater numbers of scholarship applications when they first entered college. Clearly it is necessary to control these pre-college predictors of post-college aspirations before we can confidently interpret such longitudinal studies.

Astin's recent longitudinal study (1963a), although concerned almost exclusively with structural characteristics of college environments, includes somewhat more adequate control over pre-college characteristics. He used an input-output design similar to the one we have already discussed, except that cell probability rates were applied to a cross-validation sample of students classified without respect to the college they had attended. The criterion was the student's reported plans at the end of college to seek (scored 1), or not to seek (scored 0), the Ph. D. degree. All subjects were classified into sex X initial aspiration level categories, and additional breakdowns were made for some students on as many as three additional pre-college variables (students for which cell N's were large enough to permit reliable discriminations). Each subject in the cross-validation sample was assigned a predicted criterion score based upon cell probabilities derived from the standardization sample. A discrepancy score for each student was then derived by subtracting the predicted from the actual criterion score. The analysis sought to determine whether the mean discrepancy scores for students exposed to different kinds of college environments varied significantly. The results suggest that increases in the undergraduate's motivation to seek the Ph. D. are negatively related to the size, percentage of males, and conventional orientation of the student body of which he is a member.[1] In addition attendance at a coeducational liberal arts college appeared to increase, whereas attendance at one of the northeastern men's colleges seemingly decreased such motivation.[2]

Setting aside the last two studies by Astin which are concerned with structural characteristics of colleges, the handful of studies following this third paradigm are highly congruent with the findings reported in recent college productivity studies. However, as before there remain a number of equally plausible, rival hypotheses for explaining the observed relationships, and these findings cannot yet be interpreted with confidence.

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[1] The "conventional orientation" of a college environment for a given period was defined (Astin & Holland, 1961) as the ratio of the number of students winning their baccalaurate in "accounting, secretarial, business and commercial (general and unclassified), business education, library science, or economics" to the total number of graduates produced during that period and classifiable by major field of study.

[2] A re-analysis of some of the same data, using as the dependent variable presence or absence of intention to pursue a "career in science," has been reported by Astin (1963b). The findings suggest that the male student's motivation to pursue a career in science is also positively influenced by attendance at a coeducational liberal arts college, and negatively influenced by attendance at one of the northeastern men's colleges.

Organization of this Report

Our objectives in undertaking this research were to identify types of college environments which facilitate or impede the undergraduate's motivation for advanced training, and to formulate steps which college administrators and faculties might take to encourage more of their talented students to seek graduate or professional training. In this chapter we have shown that research aimed at identifying college environments which seem unusually effective in stimulating undergraduates dates from about 1930, although it is only within the last decade that investigators have begun to employ the statistical methods necessary to isolate causal relationships. While previous studies have yielded a number of promising hypotheses and methodological insights, none has yet succeeded in achieving the objectives we have set for our inquiry.

In Chapter II we shall describe the methods used in collecting and analyzing longitudinal data on the advanced training decisions of a large number of college students.

Information useful in conceptualizing the decision to enter or not to enter a graduate or professional school is presented in Chapter III. In this section we have summarized data on changes in degree aspirations at various stages of training, reasons students give for not continuing their training, the frequency with which non-entrants applied to graduate or professional schools for admission or aid, and the degree to which various pre-college characteristics are predictive of later plans and behaviors.

Chapter IV presents an analysis of college environments and the principal tests of hypotheses concerning the effects of college upon student aspirations.

Finally, Chapter V discusses the implications of these results and offers several recommendations for increasing the proportion of talented students who are recruited into advanced graduate or professional training.

# CHAPTER II

# METHOD

This study, which may be classified as an "analysis to find out who changes," is based on a four-year follow-up of approximately 2,000 students who first entered 140 colleges and universities in the Fall of 1959. The analysis of data was designed to determine whether the type of college environment to which the student reported he had been exposed was related to changes in his motivation to seek an advanced graduate or professional degree. In this chapter we describe methods used in selecting the study sample, types of data collected on each student, sources of bias in the data, and the major types of analyses used to study the effects of college upon the student's disposition to seek advanced training.

## Sample

Antecedent selection procedures and response biases. The selection of the longitudinal sample described in this report extended over a six-year period in which both investigator-selection and self-selection factors resulted in an increasing reduction of the number of study participants. A previous analysis (Thistlethwaite, 1963) based on 26,771 study participants was concerned largely with the "drop-out" problem between high school and college, but it was neither economically feasible nor necessary to follow this entire group through college. Some of the successive reductions in the numbers of participants were deliberate. Others arose from failure to achieve complete returns from each of the successive mail surveys. Response biases to the first two surveys, completed before the initiation of this study, are only summarized here since these have already been elaborated in the earlier report.

Members of the study sample were first identified from results of the Spring, 1958 administration of the National Merit Scholarship Qualifying Test (NMSQT), a college aptitude test used to select students in a national scholarship competition. Half of the nation's secondary schools offered this test in 1958, and these schools graduated about 85 per cent of all high school graduates in 1959. An estimated 28 per cent of all high school graduates in 1959 (from the 50 states and the District of Columbia) participated. The 480,000 participants in this test are known to differ from non-participating high school students in that they more frequently planned to attend college, more often had parents who wanted them to attend, and more frequently took college preparatory courses (Dirks & Anderson, 1960). In order to exclude students unqualified for college work, only the 300,000 examinees having NMSQT selection scores equivalent to a percentile rank of 64 or higher (with respect to estimated national norms for all second-semester juniors) were designated for sampling. A 10 per cent random sample, stratified by state, was drawn, and the first mail survey was sent to these students in Fall, 1959, a few weeks before they would normally have entered college. Returns were received from 26,771 respondents who comprised approximately 90 per cent of the original sample. There was a slight response bias associated with geographical region (proportionately fewer returns from the South) and a somewhat greater bias associated with aptitude level (proportionately more returns from high-aptitude students). Eighty-one per cent, or 21,778, of these respondents indicated they were enrolling, or had already enrolled, as full-time college students in Fall, 1959.

Over 1,400 institutions of higher education were attended by this group, but only 140 institutions enrolled 35 or more of these examinees. In order to locate a sample which was not spread too thinly among the nation's colleges and universities, only respondents who had entered one of these 140 "more popular" colleges and universities (Appendix A) were eligible for selection. The names of respondents to the first survey were stratified by college of initial enrollment, and random samples of 60 names were selected from each strata containing more than 60 names, while all names were selected from each strata containing between 35 and 60 names. These procedures yielded a designated sample 7,464 examinees to which the second mail survey was sent in June, 1961 (when they would normally have completed the Sophomore year of college). Useable returns were received from 4,330 students, or 58 per cent of this group. The response rate varied by sex and aptitude level: women responded more frequently than men (63 vs. 55 per cent) and students with high NMSQT scores responded more frequently than those with low test scores.

Additional selection procedures and response biases. The final survey of these students was made in Fall, 1963, a few weeks before they would normally have entered graduate or professional school. It was sent only to students who had completed both of the earlier surveys. In addition, it was limited to students who gave responses in June, 1961, indicating that they were proceeding through college in normal progression and were not planning to withdraw from college. The latter selection criteria resulted in eliminating an additional 152 students, reducing the designated sample for the final survey to 4,178 students. Useable returns were received from 2,919, or 70 per cent of this group. As might be expected in a longitudinal study, it became increasingly difficult with each successive mail survey to locate students, even though a careful attempt was made to collect and record all address changes. The proportions of "untraceable" students among the designated samples for the surveys in 1959, 1961, and 1963 were one, two, and eight per cent, respectively. Table 1 shows that 76 per cent of the students who presumably received the final survey returned useable questionnaires.

Three kinds of response bias were present in the returns: First, as in each of the two earlier surveys, high aptitude students

### Table 1

### Returns from Fall, 1963 Survey

| Response status as of January 15, 1964 | Number of students | Percentage of initial sample | Percentage of initial sample not including deceased and untraceable students (N=3,843) |
|---|---|---|---|
| Respondents (useable returns) | 2,919 | 69.9 | 76.0 |
| Unuseable returns (incomplete questionnaires) | 66 | 1.6 | 1.7 |
| Non-respondents | 858 | 20.5 | 22.3 |
| Untraceable (left no forwarding address) | 334 | 8.0 | |
| Deceased | 1 | --- | |
| Totals | 4,178 | 100.0 | 100.0 |

tended to respond more frequently than low aptitude students. Returns were received from over 85 per cent of the students ranking in the 95th percentile or higher NMSQT range, but from only about 71 per cent of those in the 64th to 79th percentile range. Second, there was a marked tendency for response rate to covary with undergraduate grade point average (GPA), as reported by students at the end of the Sophomore year of college. The higher a student's GPA the more likely he was to respond. Third, response rate was positively related to the student's aspiration level, as reported at the end of the second year of college. The latter relationship though not as strong as the other two nonetheless represents a statistically significant trend. Finally, there was virtually no difference in the response rates of men and women. These results are described more fully in Tables 2, 3, and 4.

All of these response biases had the effect of increasing the likelihood that the study sample would be more disposed to seek advanced graduate or professional training than an unselected sample of college students. However, the purpose of this study was not to estimate the proportion of all college graduates who continue their training in graduate or professional schools, but rather to study factors influencing such plans. Consequently these response biases were not serious vitiating conditions, though they of course limit the population to which our results may be generalized.

Table 2

Response Bias Associated with Sex and Aptitude Level

| Aptitude Score | | Number and Percentage of Students[a] | | | | | |
|---|---|---|---|---|---|---|---|
| | | Men | | | Women | | |
| NMSQT selection score | Equivalent percentile rank relative to national norms | D.S. | A.S. | A. S. as % of D. S. | D.S. | A.S. | A. S. as % of D. S. |
| 88-102 | 64-79 | 560 | 399 | 71.3 | 468 | 330 | 70.5 |
| 103-124 | 80-94 | 823 | 613 | 74.5 | 667 | 496 | 74.4 |
| 125 or more | 95 or higher | 792 | 677 | 85.5 | 467 | 404 | 86.5 |
| Totals | | 2175 | 1689 | 77.7 | 1602 | 1230 | 76.8 |

[a] D. S. = Designated sample (not including deceased or untraceable students, or those returning incomplete questionnaires). A. S. = Analyzed sample (respondents returning useable returns).

Table 3

Response Bias Associated with Undergraduate Grade Point Average

| Reported G. P. A. for last semester (quarter) of sophomore year in college[a] | Number of students[b] | | A. S. as a percentage of D. S. |
|---|---|---|---|
| | D. S. | A. S. | |
| 1.50 or less | 158 | 111 | 70.3 |
| 1.51-2.00 | 356 | 255 | 71.6 |
| 2.01-2.50 | 894 | 666 | 74.5 |
| 2.51-3.00 | 1112 | 869 | 78.1 |
| 3.01-3.50 | 817 | 653 | 79.9 |
| 3.51-4.00 | 409 | 344 | 84.1 |
| No response | 31 | 21 | |
| Totals | 3777 | 2919 | 77.3 |

[a] G. P. A. using a system of grade equivalents where A = 4, B = 3, C = 2, D = 1, F = 0. No attempt was made to validate the students's report of his G. P. A.

[b] See footnote to Table 2.

Table 4

Response Bias Associated with Plans to Seek Advanced Training

| Response in June, 1961 to: "What are your educational plans for the future? (Check the highest level of education you expect to complete.)" | Number of students[a] D. S. | A. S. | A. S. as a percentage of D. S. |
|---|---|---|---|
| At least three years of college or Bachelor's degree | 1676 | 1242 | 74.1 |
| One year of graduate or professional study (M. A.) | 1131 | 891 | 78.8 |
| Professional degree (M. D ., etc.) or academic doctorate degree (Ph. D.) | 955 | 744 | 81.0 |
| No response | 15 | 12 | |
| Totals | 3777 | 2919 | 77.3 |

[a] See footnote to Table 2.

## Criterion Measures

Two criterion measures were obtained from each of these students in the final survey: the first, which may be called a measure of aspirations, consisted of the highest degree level the student said he expected to complete (question 2, Appendix E); the second, which will be called the entry criterion, consisted of the dichotomous attribute of entering or not entering a graduate or professional school in Fall, 1963 (question 1, Appendix E). Although 84 per cent of the students who graduated from college said they planned to complete a graduate or professional degree, only 45 per cent reported they were entering graduate or professional school immediately. Of course neither measure was a perfect indicant of motivation for advanced training. The aspiration measure was probably more sensitive to the tendency of respondents to give socially desirable responses, while the entry measure was probably more sensitive to temporary, situational factors affecting only the time of entry into advanced training (e.g., sickness in the home or immediate financial obstacles). Including both criteria in the analysis made interpretation of the results considerably less ambiguous than would have been possible with either one alone.

## Adjusted Criterion Measures

### Control of pre-college characteristics.

In the previous analysis (Thistlethwaite, 1963) sex and 1959 aspiration level were the two pre-college predictors (among 11 on which reasonably complete information was available) most highly related to 1961 plans to seek advanced training. However, groups matched with respect to sex and initial aspirations but differing in the amount they had raised their aspirations during the first two years of college, were still found to differ significantly with respect to several pre-college characteristics: viz., average NMSQT scores, mother's and father's educational level, family financial resources, and frequency with which the students had applied for freshman scholarships. Probable major field of study as reported at the beginning of college was also highly related to the student's initial degree aspirations. Accordingly, the following pre-college variables were controlled in this analysis:

1. Sex
2. Aspiration level in 1959
3. NMSQT score in 1958
4. Father's educational level
5. Mother's educational level
6. Number of freshman scholarship applications in 1959
7. Family financial resources as reported in 1959
8. Probable major field of study reported in 1959.

Among the 2,919 respondents, 67.5 per cent (or 1,970) indicated they had completed all requirements for the Bachelor's degree by September, 1963. Since it was usually not possible for non-graduates to enter graduate or professional school in Fall, 1963, only the data on the 1,970 college graduates were used in the analyses to be reported. Complete information on the eight pre-college variables was available for 1,772 of these graduates.

Pooled multiple-regression analyses. Multiple regression equations were developed for predicting both criteria from the eight pre-college predictors. Residual scores (discrepancies between actual and predicted criterion scores) were used as the principal dependent variables, and are hereafter referred to as adjusted criterion measures. These measures may be interpreted as indices of the extent which each student changed his motivation for advanced training beyond those changes predictable from his 1959 status on the selected pre-college variables. They were then used in correlational tests of the null hypothesis that changes in the undergraduate's motivation for advanced training were unrelated to the type of college environment to which he reported that he had been exposed.

These adjusted criterion measures, of course, had zero correlations with the corresponding predicted criterion scores, and it is clear that each of the above pre-college characteristics was controlled in this analysis. However, this method of assigning weights to each predictor capitalized upon chance factors, and results in removing a spuriously high proportion of variance from each criterion measure. As we have already noted in Chapter I, this procedure increases the likelihood of a Type II error, so that this analysis was actually "loaded" in the direction of finding no effects attributable to differences in college environments.

The theoretical remedy for this defect consists in applying the multiple regression equation derived from one sample of subjects to a new (cross-validation) sample of subjects. Among the cross-validation subjects the residuals (actual minus predicted criterion scores) should represent adjusted criterion measures which are free of the effects of such "chance factors." Adjusted criterion measures based upon residuals observed in a cross-validation sample were also calculated, as indicated below, though the classical problem of the "floating beta weights" introduced difficulties in interpreting this second type of adjusted criterion measure.

Standardization and cross-validation samples. Random samples for each sex (consisting of 475 men and 412 women) were drawn for the standardization samples. The data for these samples were used in developing new multiple-regression equations (two for men and two for women) for predicting each criterion from the pre-college characteristics (omitting sex since it was controlled by performing separate analyses by sex). These equations were then applied to the data for the remaining students (461 men and 424 women) who comprised the cross-validation samples. Unfortunately there was considerable shrinkage in the multiple correlation coefficients, particularly in the coefficients based upon the entry criterion (see Tables 10 and 12). As a result the residuals for members of the cross-validation samples tended to have significant negative correlations with the predicted criterion scores of these students. For example, the adjusted entry measures had correlations of -.11 and -.14 with the predicted entry scores for men and women, respectively, while the adjusted aspiration measures had correlations of -.03 and -.09 with the predicted aspiration scores for men and women, respectively. This means that use of the regression equations derived from the standardization samples led to systematic biases such that students in the cross-validation samples with high predicted criterion score tended to have negative residuals, while students with low predicted criterion scores tended to have positive residuals.[1] As a consequence the adjusted criterion measures calculated only on data from the cross-validation samples must be regarded as biased measures of changes in motivation for advanced training, and should be interpreted with caution.

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[1] This "finding" indicates that the slope of each line of regression of actual criterion scores (Y) upon the composite predictor variable (X) was steeper for subjects in the standardization samples than the best-fitting line of regression of Y or X among the cross-validation samples. This outcome is, of course, predictable whenever there is a marked shrinkage in the multiple correlation for the cross-validation sample. As a general rule, the cross-validation technique will yield superior adjusted criterion measures only when there is relatively little shrinkage in the multiple correlation observed in the cross-validation sample.

## Measures of College Environments

One class of measures of college environment consisted of college press scales, which included items on which each student was asked to report the kinds of demands, expectations, or activities most characteristic of his college teachers or student colleagues. Each of these scales contained eight or ten relatively homogeneous items. They may be sub-divided according to time of administration and whether they called for descriptions of the student's environment as a lowerclassman or upperclassman.

Lowerclass press scales. The 14 scales in this category were administered to students at the end of their Sophomore year of college (June, 1961), with instructions to the subject to indicate whether each statement was mostly true or mostly false of his college environment as he had observed it during his first two years of college. Scale items consisted either of items from Stern's (1958) College Characteristics Index or of items written especially to elicit responses relevant to the selected press dimensions. Items were selected both with respect to their ability to discriminate between previously studied criterion groups (groups showing different amounts of change in degree aspirations during college) and with respect to their internal consistency with other items conceptualized as belonging to the same scale. The procedures used in developing these scales have been elaborated in the earlier report (Thistlethwaite, 1963). Appendix B shows the 140 items included in these scales, instructions presented to respondents, scale reliabilities, and item statistics.

Upperclass press scales. The 20 press scales administered at the completion of college (Fall, 1963) called for ratings of only those undergraduate teachers in the student's major field of study with whom he had taken most of his courses and of student colleagues with whom he associated most commonly. Most of these scales represented new dimensions of college press which have been suggested by recent analyses of college students and their environments (Adelson, 1962; Brown, 1962; Davis, 1963; Newcomb, 1962; Nunnally et al., 1963; Pace & Stern, 1958; Stern, 1962), although some of these scales had substantial item overlap with corresponding lowerclass press scales. Item clusters and item statistics for the 160 items included in the upperclass scales are presented in Appendix C, while Appendix E shows a copy of the questionnaire as it was presented to students. Only one scale, Faculty Press for Convergent Thinking, had inadequate reliability and it was eliminated from the analysis.

Factor analysis. Scores of men and women in the cross-validation samples on each of the remaining 33 college press scales were separately intercorrelated. A factor analysis by the method of principal axes was performed on each matrix, using iterated estimates of communalities in the diagonals, and was followed by a varimax orthogonal rotation. Ten factors were extracted from each analysis. The first nine factors for men replicated with great fidelity the first nine factors for women. In addition, a similar factor analysis was performed on the matrix based upon scores of both men and women in a pooled sample contained both standardization and cross-validation subjects. However, only nine factors were extracted in the latter analysis.

Factor scores, as well as individual scale scores, were each correlated with the adjusted criterion measures.

College experiences. Included in the Fall, 1963 survey were questions about experiences often considered critical in shaping the student's motivation to pursue a scientific or scholarly career. These questions concerned the proportion of the student's close friends entering graduate school immediately, exposure to an Honors Program or advanced graduate-level courses, exposure to research experiences as an undergraduate, whether he had won certain kinds of honors or awards in college, his cumulative grade point average in college, and his extracurricular activities. Each of these experiences was correlated with the adjusted criterion measures.

## Major Fields of Study

The selection procedures and response biases reviewed above indicate that the sample of students analyzed here was not representative of all college students taking their work in different major fields at the 140 institutions. Nonetheless it was considered desirable to see whether there was evidence of differential change among subgroups in the study sample who had been exposed to different campus subcultures. The most appropriate method of answering this question is to perform analyses of covariance in which the average criterion scores (Y) for subgroups are adjusted for subgroup differences with respect to precollege dispositions to enter graduate or professional study. The best available measures of such dispositions were the composite indexes (X) based upon the eight precollege predictors used in the pooled multiple regression analyses described above. Since the subgroups (representing fields of study) varied considerably in size some subgroups had greater weight than others in determining the multiple regression equation derived for each criterion. Thus it seemed likely that the composite index was a better predictor of the criterion score in some groups than in others. This condition should be reflected in varying regressions of Y on X among the several subgroups. In the analysis for the entry criterion, the test for homogeneity of regression was insignificant, showing that the major field subgroups could be considered to have similar regressions of Y on X; in the analysis for the aspiration criterion the test was of borderline significance, indicating that the necessary assumption of homogeneity of regression was probably untenable.

# CHAPTER III

## CORRELATES OF THE DISPOSITION TO SEEK ADVANCED TRAINING

The purposes of this chapter are to examine the internal consistency of indicants of the disposition to seek advanced training, to summarize how well post-college behaviors and plans can be predicted from pre-college characteristics, and to describe developmental changes in aspirations during the college years. We shall show that pre-college characteristics accounted for a relatively small part of the variance in the criterion measures, and that with increased exposure to college, increasing numbers of students manifested dispositions to seek advanced training.

### Relationships Between Criterion Measures

As indicated in Chapter II, we expected the aspiration criterion to be more affected than the entry criterion by the tendency of respondents to give socially desirable responses. On the other hand, the entry criterion was expected to be more affected than the aspiration criterion by temporary, situational factors. A third expectation, not necessarily different from the second, was that the aspiration criterion had a lower threshold than the entry criterion as a test of motivation for advanced training. All of these expectations are consistent with the finding that the proportion of college graduates who said they planned (at some future date) to obtain graduate or professional degrees was greater than the proportion who entered a graduate or professional school immediately.

Table 5 shows that at the completion of college, about 84 per cent of all respondents said they planned to seek advanced degrees, but only 45 per cent actually carried out their plans immediately. Discrepancies between expressed plans and immediate behaviors were much more frequent among women than men: 78 per cent of the women planned, but only 27 per cent immediately entered, graduate or professional study; whereas 89 per cent of the men planned, and 62 per cent immediately entered, such study.

The intrinsic relationships between the two criterion measures was much closer among men than women. If we compare the responses to the two criterion questions by the ratio of the phi coefficient to the maximum phi coefficient we find perfect consistency for men but great inconsistency for women (ratios of 1.00 and .35 for men and women, respectively). This ratio is a measure of intrinsic association (i.e., it is unaffected by varying marginal proportions) and it does not guarantee a perfect correlation (as would the tetrachoric coefficient) whenever one cell of the four-fold table has a zero frequency. In other words, the discrepancies between expressed plans and immediate behaviors among men can be accounted for entirely by an assumed difference in item thresholds (i.e., in the difficulty of giving a "positive" response to the two criterion questions) but the discrepancies among women cannot be accounted for in this manner. We may interpret this sex difference in the closeness of intrinsic relationships by assuming that social desirability response sets affected women's responses to the question about aspirations more than their responses to the question about immediate entry, but that such response sets had no differential effect upon the men's responses to these two questions.[1]

## Responses to Related Questions

The survey literature demonstrates that responses to single questionnaire items are often unreliable. In this section we report cross-tabulations which indicate some inconsistencies in response to questions relating to aspirations.

Reasons for decisions. College graduates who did not enter graduate or professional school immediately (non-entrants) consisted of two subgroups: (a) 115 men and 207 women who said in 1963 that they planned to complete only a bachelor's degree, and (b) 284 men and 477 women who said they planned to obtain a

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[1] For men and women the phi coefficients (which are equivalent to product-moment coefficients of correlation) were .45 and .31, respectively. In subsequent analyses the aspiration question was not dichotomized, but rather scored with weights of 1, 2, and 3 for bachelor's, master's, and professional or Ph. D. degrees, respectively. The latter analyses were concerned with the predictive values of relationships, and the alternative method of scoring aspiration levels slightly raised the predictive values. For example, the product-moment correlations between terminal aspiration levels and immediate behaviors in the cross-validation samples were .62 and .39 for men and women, respectively.

## Table 5

## College Graduates Actually Entering Graduate or Professional School in Fall, 1963

| Reported degree aspirations in Fall, 1963 | N | % | Number and percentage with given aspirations actually entering grad. or prof. school in 1963 N | % |
|---|---|---|---|---|
| | | I. Men | | |
| Bachelor's degree | 115 | 11.1 | --- | ---- |
| Master's degree | 377 | 36.4 | 164 | 43.5 |
| Prof. degree or Ph.D. | 545 | 52.5 | 474 | 87.0 |
| No response | --- | ---- | --- | ---- |
| Total | 1037 | 100.0 | 638 | 61.5 |
| | | II. Women | | |
| Bachelor's degree | 207 | 22.2 | 2 | 1.0 |
| Master's degree | 609 | 65.3 | 172 | 28.2 |
| Prof. degree or Ph.D. | 115 | 12.3 | 75 | 65.2 |
| No response[a] | 2 | .2 | --- | ---- |
| Total | 933 | 100.0 | 249 | 26.7 |
| | | III. Men and Women | | |
| Bachelor's degree | 322 | 16.3 | 2 | .2 |
| Master's degree | 986 | 50.0 | 336 | 37.8 |
| Prof. degree or Ph.D. | 660 | 33.6 | 549 | 62.0 |
| No response[a] | 2 | .1 | --- | ---- |
| Total | 1970 | 100.0 | 887 | 45.0 |

[a] Counted as Bachelor aspirants in subsequent tables.

higher level degree. For convenience, we shall refer to these two subgroups as "drop-outs" and "delayers," respectively. We shall show, however, that these terms are probably not accurate descriptions of all men and women in each subgroup.

Reported reasons for not seeking advanced training immediately are summarized in Table 6. Among drop-outs the chief reasons cited were "lack of motivation or desire" (52 per cent) and "family responsibilities and financial obstacles" (16 per cent). Among delayers the same two reasons were cited most frequently, though the latter reason was given more often (27 per cent) than the former (25 per cent).

When these students were asked whether they had ever considered graduate study or an occupation which would require professional training beyond a bachelor's degree, 10 per cent of the "drop-outs" indicated that they "do plan to go (to graduate or professional school) but not this year." The latter students may actually represent delayers instead of drop-outs. Also 7 per cent of the "delayers" indicated that they had never seriously considered such advanced training or had considered it but decided against it. These students may therefore represent drop-outs rather than delayers. Moreover, it may be noted in Table 6 that greater proportions of the women than of the men among the drop-outs and delayers gave inconsistent responses to the overlapping aspiration questions; but, more importantly, women outnumbered men by 3 to 1 among the "inconsistent" responders. It is apparent that responses to the single aspiration question used as a criterion measure were unreliable, and somewhat more unreliable for women than men. Such unreliability of course has the effect of attenuating correlations between this criterion and other variables, a point which should be remembered in interpreting the magnitude of the relationships to be considered in Chapter IV.

It may appear anomalous to the reader that the men were perfectly consistent in their responses to the two criterion questions and yet were inconsistent in responses to the overlapping questions about aspirations. As we have seen, in responses to the two criterion questions men exhibited perfect consistency, i.e., they showed the maximum degree of consistency possible for the given combination of marginal proportions. On the other hand, Table 6 clearly suggests that at least some men were unreliably classified on the basis of their responses to the main aspiration question. The explanation presumably lies in the order in which questions appeared on the survey questionnaire (Appendix E). The two criterion questions were the first and second items in the survey, while the overlapping questions concerning aspirations appeared in different parts of the survey. The juxtaposition of the criterion items may thus have led to a spuriously high degree of consistency in responses to criterion questions.

Financial obstacles. To the extent that the decision not to

### Table 6

### Reasons for Not Entering Graduate or Professional School Immediately
(Non-entrant graduates only)

| | Percentage making given response in Fall, 1963 | | | | | | |
|---|---|---|---|---|---|---|---|
| | Bachelor degree aspirants 1963 | | | Grad. or prof. degree aspirants 1963 | | | |
| Reported Attitude[a] | Men (N=115) | Women (N=207) | Total (N=322) | Men (N=284) | Women (N=477) | Total (N=761) | All non-entrants (N=1083) |
| Reasons for not entering graduate or professional school immediately (20) | | | | | | | |
| Lacked motivation or desire to do graduate study immediately | 51 | 53 | 52 | 21 | 27 | 25 | 33 |
| Family responsibilities or financial obstacles made it impossible | 15 | 17 | 16 | 25 | 28 | 27 | 24 |
| Lacked academic qualifications to get admitted | 10 | 2 | 5 | 5 | 1 | 2 | 3 |
| Military service | 4 | -- | 2 | 14 | -- | 5 | 4 |
| Miscellaneous reasons | 19 | 23 | 22 | 24 | 31 | 29 | 27 |
| No response | 4 | 4 | 4 | 12 | 14 | 13 | 11 |

Table 6--Continued

| Report Attitude[a] | Percentage making given response in Fall, 1963 | | | | | | |
|---|---|---|---|---|---|---|---|
| | Bachelor degree aspirants 1963 | | | Grad. or prof. degree aspirants 1963 | | | All non-entrants (N=1083) |
| | Men (N=115) | Women (N=207) | Total (N=322) | Men (N=284) | Women (N=477) | Total (N=761) | |
| Consideration of graduate training or occupation requiring it (18) | | | | | | | |
| Never thought of it, or thought about but never seriously | 39 | 47 | 44 | 2 | 4 | 3 | 15 |
| Considered it seriously but decided against it | 51 | 37 | 42 | 3 | 4 | 4 | 15 |
| Do plan to go, but not this year | 6 | 12 | 10 | 83 | 80 | 81 | 60 |
| No response | 4 | 4 | 4 | 11 | 12 | 12 | 10 |

[a] Numbers in parenthesis refer to questions in the Survey Questionnaire (Appendix E).

seek advanced training immediately was influenced by temporary financial obstacles we would expect the entry criterion to be a relatively insensitive (high-threshold) indicant of the disposition to seek such training. About half of the non-entrants said financial obstacles played at least some part in their decision not to enter graduate school immediately. Table 7 shows that 53 per cent of the delayers and 41 per cent of the drop-outs either claimed that financial obstacles were the "major reason for not going" or that such obstacles "played some part" in their decisions. At the same time only 9 per cent of the non-entrants made one or more applications for financial support to attend a graduate or professional school, and only one-third of these applicants were unsuccessful in obtaining offers of aid. Since the bulk of the non-entrants failed to take the instrumental step of applying for aid, it is possible that some of these students who attributed their decisions to "financial obstacles" actually had little desire for advanced training.

Academic disqualifications. Relatively few of the non-entrants believed they were unqualified for advanced training, and only a negligible number had experiences which clearly indicated that they were unqualified for such training. Table 8 shows that a greater percentage of the drop-outs (19 per cent) than of the delayers (6 per cent) expressed doubts about their ability to get admitted to a graduate or professional school. Only 15 per cent of all non-entrants

## Table 7

### Financial Obstacles As Factors in the Decision Not to Enter Graduate or Professional School Immediately
(Non-entrant graduates only)

| Questionnaire response[a] | Percentage making given response in Fall, 1963 | | | | | | |
|---|---|---|---|---|---|---|---|
| | Bachelor degree aspirants (1963) | | | Grad. or prof. degree aspirants(1963) | | | All non-entrants |
| | Men (N=115) | Women (N=207) | Total (N=322) | Men (N=284) | Women (N=477) | Total (N=761) | (N=1083) |
| Role of financial obstacles in decision (19) | | | | | | | |
| Had nothing to do with it | 51 | 58 | 55 | 36 | 34 | 35 | 41 |
| Played some part in decision | 36 | 34 | 34 | 31 | 36 | 34 | 34 |
| Major reason for not going | 10 | 5 | 7 | 21 | 17 | 19 | 15 |
| No response | 3 | 3 | 3 | 12 | 13 | 12 | 10 |
| Applications for financial support to attend grad. or prof. school (4) | | | | | | | |
| Yes, two or more | 3 | -- | 2 | 6 | 4 | 5 | 4 |
| Yes, one application | 6 | 4 | 5 | 3 | 6 | 5 | 5 |
| None | 84 | 90 | 87 | 84 | 83 | 83 | 85 |
| No response | 7 | 6 | 6 | 7 | 7 | 7 | 7 |

Table 7--Continued

| Questionnaire response[a] | Percentage making given response in Fall, 1963 | | | | | | |
|---|---|---|---|---|---|---|---|
| | Bachelor degree aspirants (1963) | | | Grad. or prof. degree aspirants (1963) | | | All non-entrants (N=1083) |
| | Men (N=115) | Women (N=207) | Total (N=322) | Men (N=284) | Women (N=477) | Total (N=761) | |
| Schools offering student financial assistance (4) | | | | | | | |
| One or more | 5 | 4 | 4 | 5 | 7 | 6 | 6 |
| None (though student applied) | 4 | -- | 2 | 4 | 3 | 3 | 3 |
| None and no application | 84 | 90 | 87 | 84 | 83 | 84 | 84 |
| No response | 7 | 6 | 6 | 7 | 7 | 7 | 7 |

[a] See footnote to Table 6.

## Table 8

### Academic Disqualifications as Factors in the Decision Not to Enter Graduate or Professional School Immediately

(Non-entrant graduates only)

| | Percentage making given response in Fall, 1963 | | | | | | |
|---|---|---|---|---|---|---|---|
| | Bachelor degree aspirants (1963) | | | Grad. or prof. degree aspirants (1963) | | | All non-entrants |
| Questionnaire response[a] | Men (N=115) | Women (N=207) | Total (N=322) | Men (N=284) | Women (N=477) | Total (N=761) | (N=1083) |
| Self-perceptions: student's opinion of whether he has prerequisites necessary to be admitted to grad. or prof. school (17) | | | | | | | |
| No, or probably not | 28 | 14 | 19 | 8 | 5 | 6 | 10 |
| Yes, or probably yes | 72 | 85 | 81 | 92 | 95 | 94 | 90 |
| No response | -- | 1 | -- | -- | -- | -- | -- |
| Applications for admission to grad. or prof. school (3) | | | | | | | |
| Yes, two or more applications | 4 | 1 | 2 | 10 | 4 | 6 | 5 |
| Yes, one application | 8 | 5 | 6 | 11 | 11 | 11 | 10 |
| No, but do expect to apply in 1964 | -- | 2 | 1 | 34 | 40 | 38 | 27 |
| No; do not expect to apply in 1964 | 88 | 92 | 90 | 45 | 44 | 44 | 58 |
| No response | -- | -- | -- | -- | 1 | 1 | 1 |

Table 8--Continued

| Questionnaire response[a] | Bachelor degree aspirants (1963) Men (N=115) | Bachelor degree aspirants (1963) Women (N=207) | Bachelor degree aspirants (1963) Total (N=322) | Grad. or prof. degree aspirants (1963) Men (N=284) | Grad. or prof. degree aspirants (1963) Women (N=477) | Grad. or prof. degree aspirants (1963) Total (N=761) | All non-entrants (N=1083) |
|---|---|---|---|---|---|---|---|
| | Percentage making given response in Fall, 1963 | | | | | | |
| Schools accepting students for admission (3) | | | | | | | |
| One or more | 10 | 4 | 7 | 15 | 14 | 14 | 12 |
| None (though student applied) | 2 | 2 | 2 | 6 | 1 | 3 | 2 |
| None and no application | 88 | 94 | 92 | 79 | 85 | 83 | 86 |
| No response | -- | -- | -- | -- | 1 | 1 | 1 |

[a] See footnote to Table 6.

made one or more applications for admission, and only 2 per cent both applied and failed to receive an offer of admission from at least one graduate or professional school.

Responses to the question concerning applications for admission suggest that some of the delayers will not in fact pursue an advanced degree, since 44 per cent of the delayers said they did not expect to apply for admission either immediately or during the following year.

## Pre-college Characteristics as Predictors of Decisions

It will be recalled that the eight pre-college characteristics discussed in Chapter II were used to develop multiple regression equations for predicting each criterion, and that this was done both (a) in an analysis in which all college graduates were pooled, and (b) in an analysis in which separate equations were developed for men and women in standardization samples and then applied to cross-validation samples. In this section we shall report multiple correlations and related statistics which show how well the criteria can be predicted from each pre-college predictor and from an optimal combination of these predictors. Since sex and probable major field of study were nominal classifications, data for these attributes were recoded as "dummy variables" in the manner described by Tatsuoka and Tiedeman (1963, p. 148).

Aspiration criterion. The previous data suggest that the terminal aspiration measures of men were somewhat freer of social desirability response sets and more congruent with responses to other questionnaire items, indicating that the aspiration measures were more reliable for men than women. Other things being equal, these sex differences should mean that the terminal aspirations of men are more predictable from pre-college variables than are those of women. The predictive validities to be discussed are consistent with this expectation.

In order to give some notion of the intrinsic relationships involved, tetrachoric coefficients as well as product-moment correlations are summarized in Table 9. The tetrachoric coefficients are unaffected by the marginal proportions which vary from one predictor to the next, while the product-moment coefficients indicate the practical validity of each variable in predicting terminal aspirations.

Only two of the pre-college variables had significant validities for women: initial aspiration level (.23) and NMSQT score (.15). On the other hand, six of the pre-college variables had significant validities for men: initial aspiration level (.39), NMSQT score (.22), intention to major in the biological sciences or psychology (.21), father's educational level (.15), intention to major in the physical sciences (-.14), and number of freshman scholarship applications (.10). The predictive value of intention to major in the biological sciences undoubtedly arises, in part, from classifying with biology majors pre-medical and pre-dental students, who typically make their career decisions before entering college (Thielens, 1957). The negative correlation for intention to major in the physical sciences no doubt in part reflects the fact that a large proportion of the physical science majors were engineering students, who are below average in the frequency with which they plan to seek graduate training (Thistlethwaite, 1963).

Validities determined from the analysis based upon the pooled samples are shown in the last column of Table 9. In this analysis, sex was treated as a predictor variable, and it can be seen that it had a validity (.37) nearly as high as that of initial aspiration level (.43).

Multiple correlations for predicting aspirations from optimal combinations of the pre-college variables are shown in the bottom half of Table 10. Among men there was a multiple correlation of .451, which shrinks to .402 when the regression equation is applied to the cross-validation sample. Among women the multiple correlation was .275, which shrinks to .233 when cross-validated. The pooled regression sample yielded a multiple correlation of .507, indicating that, at best, only about 25 per cent of the variance in aspirations can be accounted for on the basis of these pre-college variables. Beta weights, shown in the upper half of this table, show the relative weights assigned to each pre-college variable in the three regression analyses. Looking at the weights for the three analyses, it can be seen that initial aspirations accounted for the largest share

## Table 9

## Pre-college Predictors of Post-college Aspiration Levels

| Predictor | Correlations between predictors and Fall, 1963 aspirations | | | | | |
|---|---|---|---|---|---|---|
| | Tetrachoric correlation coefficients | | | Product-moment correlation coefficients[a] | | |
| | Men (N=1037) | Women (N=933) | Total (N=1970) | Men (N=475) | Women (N=412) | Total (N=1772) |
| Sex (male) | | | .68** | | | .37** |
| Aspiration level (1959) | .56** | .38** | .60** | .39** | .23** | .43** |
| National Merit Scholarship Qualifying Test Score (1958) | .21** | .13* | .28** | .22** | .15** | .22** |
| Father's educational level | .22** | .13* | .11** | .15** | .04 | .10* |
| Mother's educational level | .16** | .02 | .09** | .08 | .05 | .06 |
| Number of freshman scholarship applications (1959) | .10 | .07 | .08 | .10* | .06 | .10** |
| Family financial resources (1959) | .03 | .09 | .02 | .03 | .08 | .03 |
| Probable major field of study (1959): | | | | | | |
| Humanities | .14 | .10 | -.18** | .06 | .03 | -.05 |
| Physical Sciences | -.21** | .11 | .17** | -.14** | .00 | .06 |
| Biol. Sciences, Psychology | .46** | .01 | .38** | .21** | .03 | .15** |
| Social Sciences | .00 | .08 | -.37** | .00 | -.01 | -.11** |
| Misc. fields | -.10 | -.24** | -.09 | -.06 | -.04 | -.06 |

[a] Product-moment coefficients were based only on subjects for whom complete information on all predictors was available. Correlations for men and women are based only on students in the standardization samples, while those for all students are based on all students in the pooled standardization and cross-validation samples.

*$\underline{p} < .05$
**$\underline{p} < .01$

Table 10

Beta Coefficients and Multiple Correlation Coefficients for Predicting Terminal Aspiration Levels from Pre-college Characteristics
(College graduates only)

| Predictor | Regression and multiple correlation coefficients | | |
|---|---|---|---|
| | Men (N=475) | Women (N=412) | Total (N=1772) |
| **I. Beta coefficients** | | | |
| Sex | | | .30 |
| Aspiration level (1959) | .30 | .22 | .33 |
| National Merit Scholarship Qualifying Test Score (1958) | .17 | .11 | .13 |
| Father's educational level | .08 | -.02 | .07 |
| Mother's educational level | -.01 | .03 | .02 |
| Number of freshman scholarship applications (1959) | .04 | .03 | .03 |
| Family financial resources (1959) | -.05 | .09 | -.01 |
| Probable major field of study (1959): | | | |
| Biological Sciences, Psychology | .18 | -.02 | .08 |
| Physical Sciences | -.12 | -.04 | -.02 |
| Humanities | .00 | -.01 | .04 |
| Social Sciences | -.00 | .01 | .07 |
| Misc. fields | .00 | -.00 | .00 |
| **II. Multiple correlation coefficients** | | | |
| All predictors (standardization sample) | .451 | .275 | .507 |
| All predictors (cross-validation sample) | .402 | .233 | |

of this variance, not only in the "total" but also in the separate sex analyses.[1]

Entry criterion. Table 11 summarizes both intrinsic relationships and the predictive values of the relationships between pre-college variables and the entry criterion. Generally, initial aspiration level, sex, NMSQT score, and father's educational level, in that order, were the best predictors of immediate entry into a graduate or professional school. In the pooled sample, we find a multiple correlation of .485, which indicates that--at best--about 24 per cent of the variance in this criterion can be accounted for on the basis of the pre-college variables (Table 12). The most notable results of this analysis are: First, the entry criterion, like the aspiration criterion, was less successfully predicted for women than for men. In Table 12 it can be seen that for men there was a multiple correlation of .418, which shrinks to .332 when cross-validated, while for women there was a correlation of .370, which shrinks to .245 when cross-validated. Second, there was considerably greater shrinkage in the multiple correlations for the entry criterion than for the aspiration criterion. As we have seen in Chapter II, such large shrinkage means that the adjusted criterion measures (residuals) based on the cross-validation samples are biased, and somewhat more biased for the entry correlation than for the aspiration criterion.

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[1] In Tables 10 and 12 the beta coefficients for "miscellaneous fields" are necessarily zero, since the fifth dummy variable for probable major field of study may be defined by exclusion from each of the other major field categories.

## Changes in Plans During the College Years

Developmental changes in plans to seek advanced training were studied by comparing the responses to similar questions concerning degree aspirations obtained on three separate occasions--at the beginning of college, after the second year of college, and after the completion of college. Levels of aspiration on each occasion were related to "time of decision," sex, aptitude test scores, and major field of study.

Time of decision. Figure 1 plots the proportion of men and women, in each of three reported "time of decision" categories, who said on each occasion that they planned to obtain a graduate or professional degree. The "time of decision" classification was based on the student's retrospective recall (at the completion of college) of when he made his decision to seek, or not to seek, graduate study. By comparing these retrospective reports with changes in aspirations computed from repeated measurements we obtain some indication of the congruency of the self-reports obtained at different stages of the student's development. Figure 1 shows that both men and women who said they made their decisions during high school or before showed the least gain in aspirations during the college years. Men who said they made their decisions during the first or second year in college showed greater gains

## Table 11

### Pre-college Predictors of Entry into Graduate or Professional School (College graduates only)

| Predictor | Correlations between predictors and entry into graduate or professional school in Fall, 1963 | | | | | |
|---|---|---|---|---|---|---|
| | Tetrachoric correlation coefficients | | | Product-moment correlation coefficients[a] | | |
| | Men (N=1037) | Women (N=933) | Total (N=1970) | Men (N=475) | Women (N=412) | Total (N=1772) |
| Sex (male) | | | .53** | | | .35** |
| Aspiration level (1959) | .49** | .43** | .55** | .34** | .23** | .39** |
| National Merit Scholarship Qualifying Test Score (1948) | .25** | .25** | .29** | .20** | .23** | .24** |
| Father's educational level | .21** | .26** | .19** | .24** | .20** | .15** |
| Mother's educational level | .18** | .19** | .14** | .17** | .13** | .11** |
| Number of freshman scholarship applications (1959) | .07 | .10 | .09* | .10* | .08 | .10** |
| Family financial resources (1959) | .11* | .06 | .07 | .10* | .11* | .09 |
| Probable major field of study (1959): | | | | | | |
| Humanities | .04 | .13 | -.08 | .06 | .10* | -.03 |
| Physical Sciences | -.08 | .21* | .22** | -.07 | .00 | .14** |
| Biol. Sciences, Psychology | .37** | .22* | .31** | .15** | .07 | .13** |
| Social Sciences | .01 | -.13 | -.27** | -.01 | -.04 | -.12** |
| Misc. fields | -.16* | -.27** | -.20** | -.07 | -.11* | -.11** |

[a] See footnote to Table 9.

*$p < .05$
**$p < .01$

## Table 12

### Beta Coefficients and Multiple Correlation Coefficients for Predicting Immediate Entry into Graduate or Professional School (College graduates only)

| Predictor | College graduates in standardization samples<br>Men (N=475) | <br>Women (N=412) | All coll. graduates (N=1772) |
|---|---|---|---|
| **I. Beta coefficients** | | | |
| Sex | | | .28 |
| Aspiration level (1959) | .28 | .20 | .26 |
| National Merit Scholarship Qualifying Test Score (1958) | .09 | .16 | .13 |
| Father's educational level | .15 | .13 | .10 |
| Mother's educational level | .05 | .05 | .04 |
| Number of freshman scholarship applications (1959) | .06 | .05 | .05 |
| Family financial resources (1959) | .02 | .06 | .04 |
| Probable major field of study (1959): | | | |
| Humanities | .02 | .09 | .06 |
| Physical Sciences | -.03 | -.02 | .03 |
| Biological Sciences, Psychology | +.04 | .05 | .09 |
| Social Sciences | -.00 | .06 | .06 |
| Misc. fields | .00 | .00 | .00 |
| **II. Multiple correlation coefficients** | | | |
| All predictors (standardization sample) | .418 | .370 | .485 |
| All predictors (cross-validation sample) | .332 | .245 | --- |

in aspirations during the period 1959-61 than either of the other subgroups of men. The gain in aspirations during this period for the subgroup of women who made similar retrospective reports is actually slightly greater than the corresponding gains of the other subgroups of women, though it obviously does not differ significantly from the gain shown by women saying they made their decisions before college. Finally, both men and women who said they made their decisions in the third or fourth year in college exhibited the sharpest increases in aspirations during the period 1961-63, though the gain for women is not markedly greater than the corresponding gain shown by women who said they made their decisions during the first or second year of college. We conclude that there is sufficient congruency in the self-reports to justify putting some credence both in the retrospective recalls and in the periodic reports of aspirations; further, we should place somewhat greater credence in the reported plans of men than of women.

We note in Figure 1 that two developmental patterns are characteristic of both sexes: first, the longer the exposure to college the greater the proportion of students planning to seek advanced degrees; second, increases in proportions opting for such training are greater during the last two, than during the first two, years of college. At the beginning of college only about half of all graduates planned to do graduate study; after two years some 60 per cent reported such plans; and at the completion

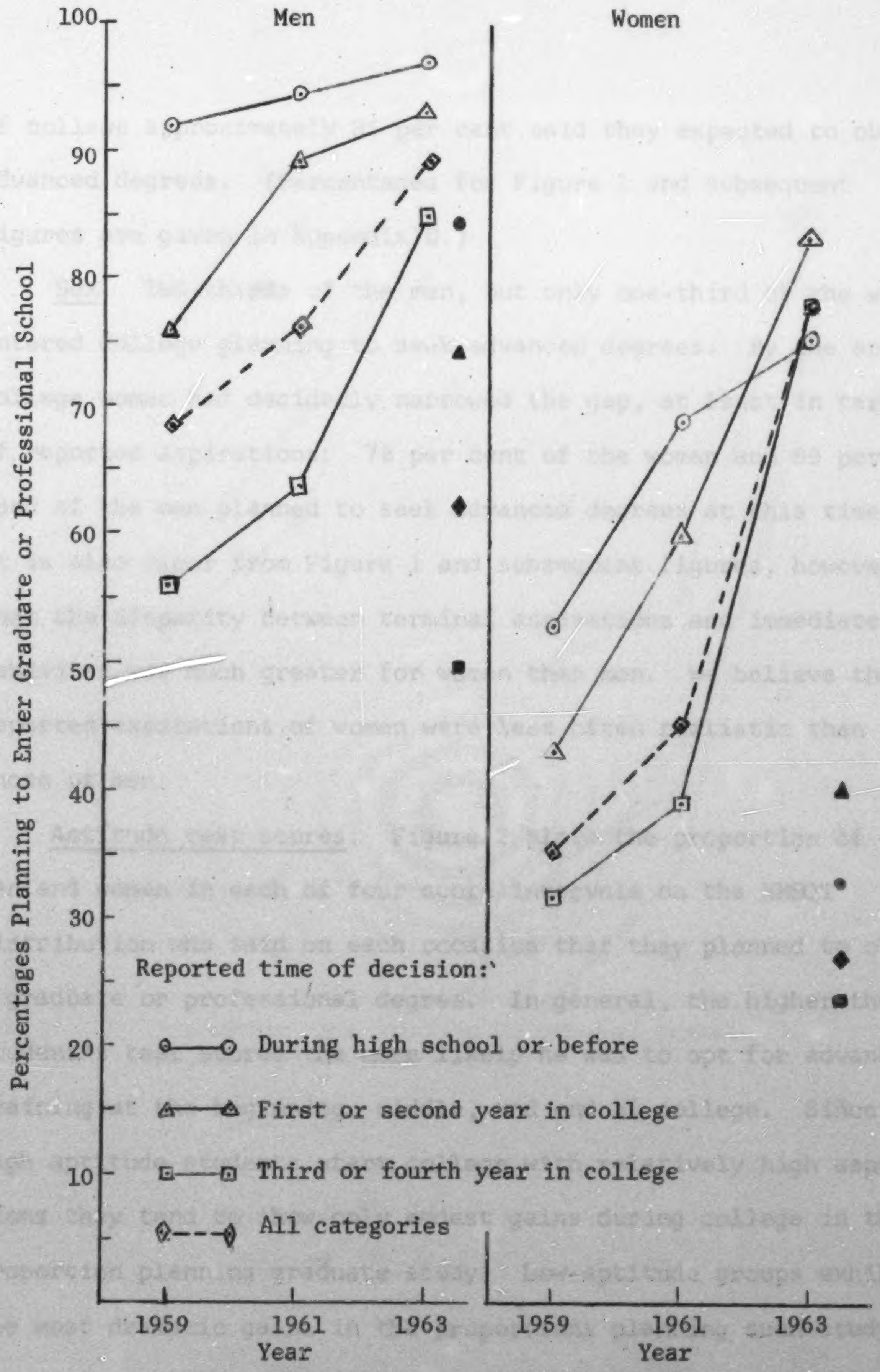

Figure 1. Changes in Plans to Seek Advanced Training and Reported Time of Decision. (Blackened symbols show the percentages reporting in 1963 that they had entered graduate or professional school immediately.)

of college approximately 85 per cent said they expected to obtain advanced degrees. (Percentages for Figure 1 and subsequent figures are given in Appendix D.)

Sex. Two-thirds of the men, but only one-third of the women, entered college planning to seek advanced degrees. By the end of college women had decidedly narrowed the gap, at least in terms of reported aspirations: 78 per cent of the women and 89 per cent of the men planned to seek advanced degrees at this time. It is also clear from Figure 1 and subsequent figures, however, that the disparity between terminal aspirations and immediate behaviors was much greater for women than men. We believe the reported aspirations of women were less often realistic than those of men.

Aptitude test scores. Figure 2 plots the proportion of men and women in each of four score intervals on the NMSQT distribution who said on each occasion that they planned to obtain a graduate or professional degree. In general, the higher the student's test scores the more likely he was to opt for advanced training at the beginning, middle, and end of college. Since high aptitude students start college with relatively high aspirations they tend to show only modest gains during college in the proportion planning graduate study. Low-aptitude groups exhibited the most dramatic gains in the proportions planning such study. One wonders whether the development of aspirations for graduate study

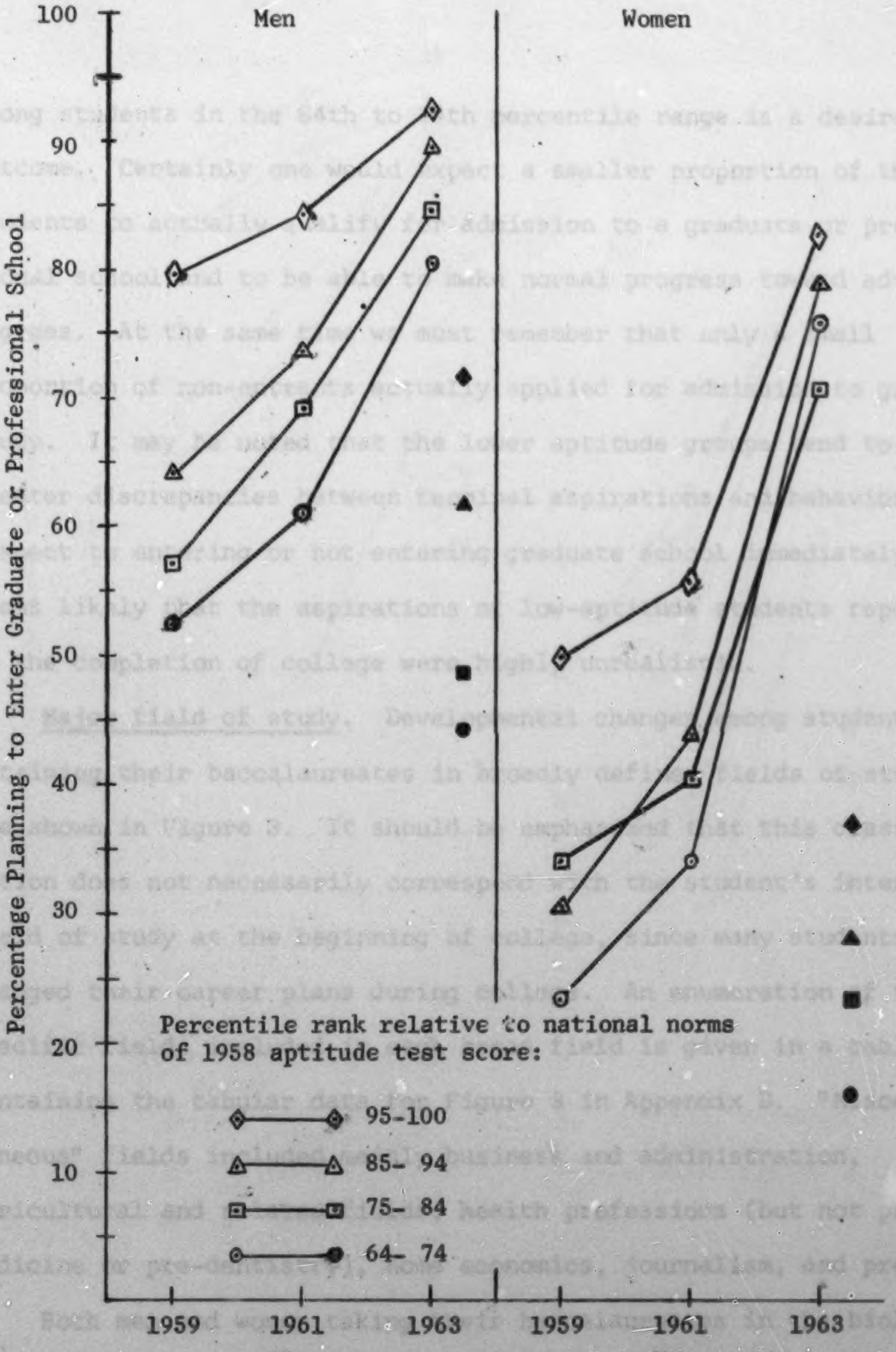

Figure 2. Changes in Plans to Seek Advanced Training as a Function of Aptitude Level. (Blackened symbols show the percentages reporting in 1963 that they had entered graduate or professional school immediately.)

among students in the 64th to 74th percentile range is a desirable outcome. Certainly one would expect a smaller proportion of these students to actually qualify for admission to a graduate or professional school and to be able to make normal progress toward advanced degrees. At the same time we must remember that only a small proportion of non-entrants actually applied for admission to graduate study. It may be noted that the lower aptitude groups tend to exhibit greater discrepancies between terminal aspirations and behavior with respect to entering or not entering graduate school immediately. It seems likely that the aspirations of low-aptitude students reported at the completion of college were highly unrealistic.

Major field of study. Developmental changes among students obtaining their baccalaureates in broadly defined fields of study are shown in Figure 3. It should be emphasized that this classification does not necessarily correspond with the student's intended field of study at the beginning of college, since many students changed their career plans during college. An enumeration of the specific fields included in each broad field is given in a table containing the tabular data for Figure 3 in Appendix D. "Miscellaneous" fields included mainly business and administration, agricultural and related fields, health professions (but not pre-medicine or pre-dentistry), home economics, journalism, and pre-law.

Both men and women taking their baccalaureates in the biological sciences and psychology entered college with relatively high aspirations, and tended to maintain their unusually high aspirations

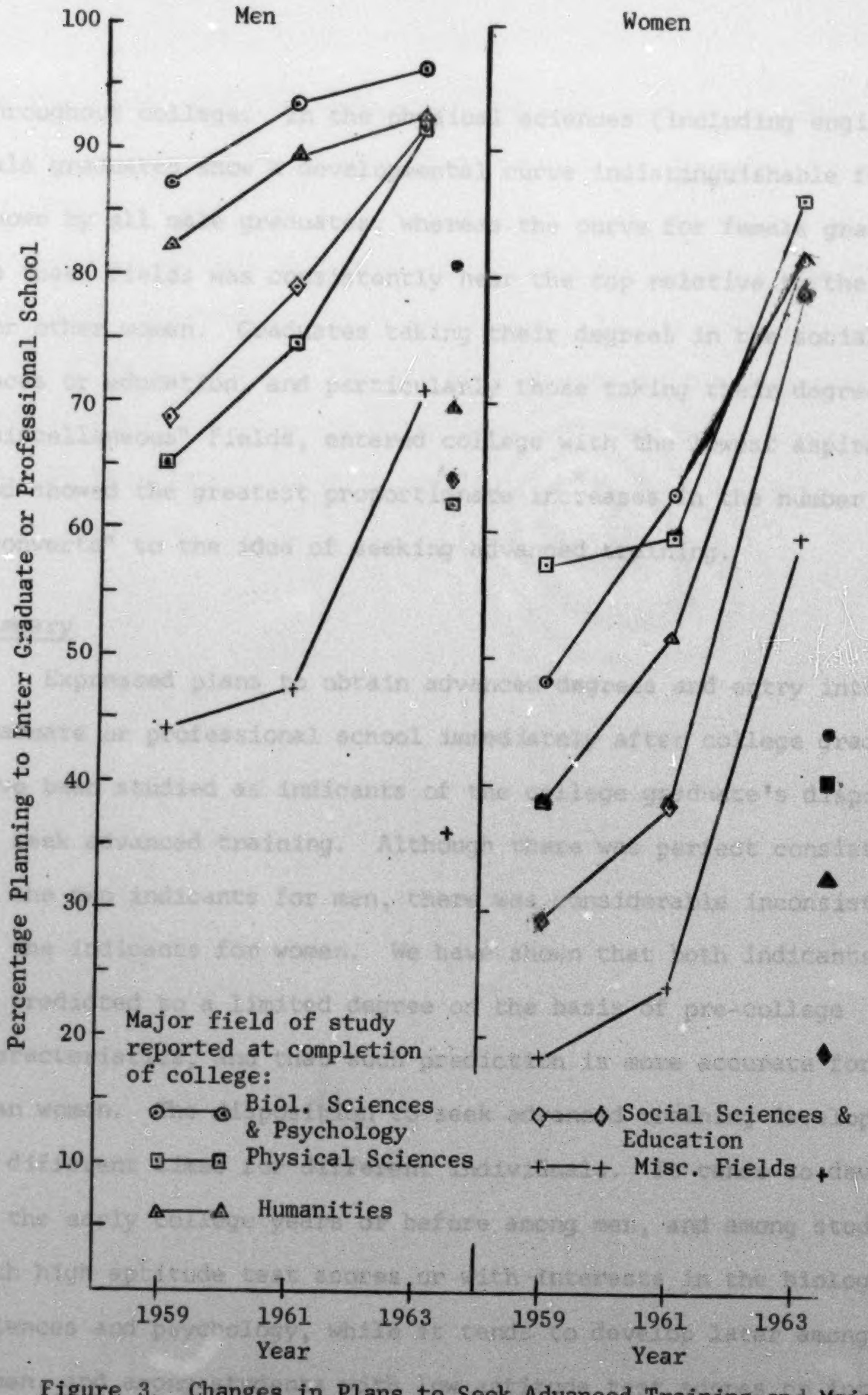

Figure 3. Changes in Plans to Seek Advanced Training and Major Field of Study. (Blackened symbols show the percentage reporting in 1963 that they had entered graduate or professional school immediately.)

throughout college. In the physical sciences (including engineering) male graduates show a developmental curve indistinguishable from that shown by all male graduates, whereas the curve for female graduates in these fields was consistently near the top relative to the curves for other women. Graduates taking their degrees in the social sciences or education, and particularly those taking their degrees in "miscellaneous" fields, entered college with the lowest aspirations, and showed the greatest proportionate increases in the number of "converts" to the idea of seeking advanced training.

## Summary

Expressed plans to obtain advanced degrees and entry into a graduate or professional school immediately after college graduation have been studied as indicants of the college graduate's disposition to seek advanced training. Although there was perfect consistency in the two indicants for men, there was considerable inconsistency in the indicants for women. We have shown that both indicants can be predicted to a limited degree on the basis of pre-college characteristics, and that such prediction is more accurate for men than women. The disposition to seek advanced training develops at different times for different individuals. It tends to develop in the early college years or before among men, and among students with high aptitude test scores or with interests in the biological sciences and psychology, while it tends to develop later among women, and among students with low aptitude test scores or interests in the social sciences, education, or miscellaneous fields. Perhaps the most striking developmental pattern is the tendency for all sub-groups--regardless of sex, aptitude level, or major field of interest-to exhibit increased aspirations for higher academic attainment with increased exposure to college. In the next chapter we turn to the question of whether such changes in the disposition to seek advanced training are associated with particular kinds of college experiences and with specifiable types of college environments.

# CHAPTER IV

# COLLEGE ENVIRONMENTS AND CHANGES IN DISPOSITIONS TO SEEK ADVANCED TRAINING

In this chapter we shall summarize and briefly discuss the results of correlational tests of the hypothesis that psychological characteristics of college environments have effects upon plans to seek advanced training. The results of the factor analyses of the college press scales will be discussed first, since they provide a set of independent categories in terms of which the correlations may be conveniently organized.

## Dimensions for Describing College Environments

As we have seen in Chapter II the survey data included student responses to 33 college press scales, 14 of which were administered in 1961 and described lowerclass college environments, and 19 of which were administered in 1963 and described upperclass college environments. Scores from each scale were separately intercorrelated for three groupings of subjects: (a) 461 men in the cross-validation sample, (b) 424 women in the cross-validation sample, and (c) 1,772 men and women in the pooled sample. An independent factor analysis was then performed for each correlation matrix.

For convenience, press scales have been numbered in the following discussion with two-digit, hyphenated numbers: the first digit refers to the time of administration ("1" for lowerclass scales and "2" for upperclass scales); the second digit refers to the order in which the scales are listed in Appendices B and C.

Seven of the lowerclass scales had considerable overlap in item content with upperclass scales. Thus the following similar, if not equivalent, scales were included in both the 1961 and 1963 administrations: Faculty press for Affiliation (1-1, 2-10); Faculty Press for Enthusiasm (1-3, 2-4); Faculty Press for Achievement (1-4, 2-2); Faculty Press for Compliance (1-5, 2-11); Faculty Press for Independence (1-8, 2-3); Student Press for Openness to Experience (1-11, 2-20); and Student Press for Intellectualism (1-14, 2-13). In spite of this fact, the similar lowerclass and upperclass press scales were not highly correlated, and indeed generally had their highest loadings on different factors. In other words, the kind of college press reported by students in their initial college years had little relation to the kind of press they reported during their junior and senior years. However, it was true that the items in the foregoing pairs of scales were not identical (as an examination of Appendices B and C will reveal); also the lowerclass scales were administered with instructions to describe the "whole" college environment, while the upperclass scales were administered with instructions to describe only the major field faculty under whom the student had taken most of his courses or to describe one's most intimate student colleagues. Hence the relatively low correlations between the paired scales may have been due either to lack of scale equivalence (differences in item content or instructions) or to changes in the kinds of press to which students were exposed during the early and late phases of college.

Similarities in the factor structures obtained in the three factor analyses may be illustrated by juxtraposing each scale's rotated factor loadings for similar factors. Thus press scales are listed below under the factors on which each scale had its highest loading. Exceptions to this rule are indicated by loadings enclosed in parentheses; in all such cases the scale's highest loading in that analysis was on another factor.[1]

Factor 1--Excellence of Faculty in Major Field

| | | Loadings | | |
|---|---|---|---|---|
| | | Men | Women | Total |
| 2-8 | Excellence of Faculty Teaching | .81 | .82 | .83 |
| 2-4 | Faculty Enthusiasm for Intellectual Values | .75 | .83 | .81 |
| 2-7 | Faculty Adequacy as Positive Role Models | .61 | .81 | .70 |
| 2-12 | Faculty Structuring of Major Field of Study | .67 | .74 | .69 |
| 2-3 | Faculty Press for Independent Thinking | .61 | .80 | .68 |
| 2-2 | Faculty Academic Standards | .56 | .60 | .62 |
| 2-5 | Faculty Press for Advanced Training | .55 | .66 | .54 |
| 2-1 | Faculty Evaluations of Ability | (.42) | .71 | .51 |

---

[1] Correlation matrices and complete factor loadings are presented in Appendix D. We have indicated in the text, by adding the phrase "reflected," whenever the signs of loadings given in Appendix D were reversed in order to make positive most of the high scale loadings on each factor. The signs of the factor correlations presented later in Table 14 were similarly reversed whenever factors were redefined by reflection of loadings.

| | Loadings | | |
|---|---|---|---|
| | Men | Women | Total |
| 2-9 Availability of Faculty to Students | (.27) | .68 | (.41) |
| 2-10 Faculty Press for Affiliation | (.39) | .77 | (.51) |
| 2-19 Student Opposition to Faculty Influence | -.49 | -.51 | -.49 |

This factor is clearly descriptive of teachers in the student's major field of study. The loadings indicate that students evaluated these teachers in terms of a fairly global, "good-bad" dimension, and did not finely differentiate between the specific aspects of the teacher's behavior that these scales were designed to measure. The negative loading for Student Opposition to Faculty Influence means that students who rated their teachers favorably tended to report that their peer groups showed little opposition to faculty influence.

### Factor 2--Lowerclass Humanistic-Intellectual Press

| | Loadings | | |
|---|---|---|---|
| | Men (reflected) | Women | Total |
| 1-11 Student Press for Estheticism | .79 | .79 | .77 |
| 1-4 Faculty Press for Achievement | .74 | .81 | .73 |
| 1-7 Faculty Press for Humanism | .74 | .67 | .68 |
| 1-10 Student Press for Competition | .67 | .70 | .65 |
| 1-8 Faculty Press for Independence | .74 | .62 | .63 |
| 1-12 Student Press for Reflectiveness | .64 | .64 | .61 |
| 1-14 Student Press for Intellectualism | .64 | .61 | .54 |
| 1-3 Faculty Enthusiasm | .57 | .50 | (.41) |

This factor included only lowerclass scales, and is descriptive of college environments as seen by freshmen and sophomores. Moreover it was the only factor to emerge that was defined by scales descriptive of both faculty and student behaviors. It suggests that colleges having faculties who stress humanities and achievement tend to have student bodies with similar values and goals.

### Factor 3--Faculty Press for Compliance and Vocationalism

| | Loadings | | |
|---|---|---|---|
| | Men (reflected) | Women | Total |
| 1-5 Faculty Press for Compliance | .77 | .76 | .76 |
| 1-9 Faculty Press for Vocationalism | .59 | .57 | .59 |
| 2-11 Faculty Press for Compliance | .56 | (.42) | .51 |

This factor indicates that institutions with practical or vocationally-oriented curricula tend to have faculties which exercise close supervisory control over students. It may be noted also that this was the only factor that was defined by scales descriptive of both lowerclass and upperclass environments.

### Factor 4--Student Camaraderie

| | Loadings | | |
|---|---|---|---|
| | Men (reflected) | Women | Total (reflected) |
| 2-17 Student Playfulness | .68 | .69 | .78 |
| 2-16 Student Rebelliousness | .60 | .56 | .58 |
| 2-15 Student Cohesiveness | .53 | .59 | .51 |
| 2-18 Student Press for Status | (.32) | (.21) | .36 |

Since these scales had no counterparts in the lowerclass scales we cannot interpret this factor as necessarily descriptive of only upperclass environments. It is clear that students who said that they and their peers had a lot of fun in college also tended to be relatively rebellious and cohesive. For want of a better term we may call this a Student Camaraderie factor.

### Factor 5--Upperclass Student Intellectualism

| | Loadings<br>Men (reflected) | Women (reflected) | Total |
|---|---|---|---|
| 2-13 Student Press for Intellectualism | .75 | .78 | .81 |
| 2-20 Student Press for Openness to Experience | .75 | .78 | .77 |

Since the lowerclass scale called Student Press for Intellectualism (1-14) had only negligible loadings on this factor we conclude that this factor is primarily descriptive of the student's associates during the last two years of college.

### Factor 6--Lowerclass Faculty Affiliation

| | Loadings<br>Men (reflected) | Women | Total |
|---|---|---|---|
| 1-1 Faculty Press for Affiliation | .57 | .80 | .73 |
| 1-6 Faculty Supportiveness | .55 | .61 | .66 |
| 1-3 Faculty Enthusiasm | (.39) | (.43) | .58 |
| 1-2 Faculty Directiveness | .41 | (.26) | .37 |

This factor is clearly descriptive of lowerclass college environments since the upperclass Faculty Press for Affiliation scales (2-10) had negligible loadings on this factor.

### Factor 7--Upperclass Student Competition

| | Loadings<br>Men | Women | Total |
|---|---|---|---|
| 2-14 Student Press for Unfavorable Self-evaluations | .75 | .82 | .43 |

This factor indicates the extent to which the student perceived his own talents, skills, and academic performance to compare unfavorably with those of his upperclass associates. The lowerclass scale, Student Press for Competition (1-10) had relatively low loadings on this factor, indicating that Factor 7 is primarily an upperclass factor. Two other scales had moderate loadings (.20 to .31) on this factor in all three analyses: Faculty Evaluations of Ability (2-1), which had negative loadings, and Faculty Academic Standards (2-2), which had positive loadings. Thus students saying that they compared unfavorably with their peers with respect to ability tended to say that their teachers both enforced high standards of performance and rated them unfavorably.

### Factor 8--Lowerclass Social Conformity

| | Loadings | | |
|---|---|---|---|
| | Men | Women | Total (reflected) |
| 1-13 Student Press for Social Conformity | .62 | .69 | .35 |
| 1-2 Faculty Directiveness | (.11) | .33 | (.10) |

This factor is largely specific to scale 1-13 in the analyses for men and women. The upperclass scale with similar item content, Student Press for Status (2-18), had negligible loadings on this factor. This factor was less clearly defined in the "total" analysis, since Student Press for Intellectualism (1-14), Faculty Press for Compliance (2-11), and Student Press for Reflectiveness (1-12) had reflected loadings on this factor of .32, .31, and .30, respectively--loadings which were almost as high as that for scale 1-13. It is not clear what these scales have in common, and Factor

8 in the "total" analysis was uninterpretable.

### Factor 9--Upperclass Press for Status

| | Loadings<br>Men<br>(reflected) | <br>Women<br>(reflected) | <br>Total |
|---|---|---|---|
| 2-18 Student Press for Status | .67 | .54 | (no corresponding factor) |

This scale-specific factor emerged only in the analyses for men and women. In the "Total" analysis, scale 2-18 had its highest loading (.36) on Factor 4.

### Factor 10--Affiliation of Faculty in Major Field
(Men and Total only)

| | Loadings<br>Men | <br>Women | <br>Total |
|---|---|---|---|
| 2-10 Faculty Press for Affiliation | .83 | (No corresponding factor) | .77 |
| 2-9 Availability of Faculty to Students | .83 | | .76 |
| 2-1 Faculty Evaluations of Ability | .53 | | (.50) |

The item content of the two scales which largely define this factor for men were seen by women as relatively undistinguishable from the item content of Factor 2 scales. The tenth factor for women clearly did not correspond to this factor as the following loadings indicate.

### Factor 10'--Inflexibility of Faculty in Major Field
(Women only)

| | Loading<br>Women |
|---|---|
| 2-11 Faculty Press for Compliance | .53 |
| 2-10 Faculty Press for Affiliation | (-.33) |
| 2-9 Availability of Faculty to Students | (-.41) |

This factor for women was primarily descriptive of faculty in the student's major field, since the corresponding lowerclass scale--Faculty Press for Compliance (1-5)--had a loading of only .07 on this factor.

Table 13 classifies both factors and college press scales with reference to the time of administration and the object of description. It can be seen that the lowerclass scales included nine scales descriptive of college faculties and five descriptive of peers, while the upperclass scales included eleven scales descriptive of faculties and eight descriptive of peers. However, when we consider the referents of the factors--in which redundancy has been reduced--we find that there are only three interpretable lowerclass factors and at most six interpretable upperclass factors. The former included one descriptive of faculties, one descriptive of students, and one descriptive of both faculties and students; the latter included two descriptive of faculties, and four descriptive of students. In addition one factor appeared to be descriptive of both lowerclass and upperclass teachers.

The major findings of the factor analyses may be summarized as follows: First, the factors which emerged from the three independent

Table 13

Classification of College Press Scales and Factors

| | Scales and Factors | | |
|---|---|---|---|
| | Group reference | | |
| Lowerclass or upperclass reference | Faculty | Students | Faculty and students |
| I. College Press Scales (Code numbers only) | | | |
| Lowerclass | 1-1 to 1-9 | 1-10 to 1-14 | |
| Upperclass | 2-1 to 2-12 (omitting 2-6) | 2-13 to 2-14 | |
| II. College Press Factors | | | |
| Lowerclass | 6-Faculty affiliation | 8-Social conformity | 2-Humanistic-intellectual press |
| Upperclass | 1-Excellence of faculty in major field<br>10-Affiliation of faculty in major field<br>10'-Inflexibility of faculty in major field | 4-Student camaraderie<br>5-Student intellectualism<br>7-Student competition<br>9-Press for status | |
| Both | 3-Faculty press for compliance and vocationalism | | |

analyses were strikingly similar. Second, lowerclass and upperclass scales tended to load highly on different factors, even though some of the scales in the two groups were similar in item content. Third, scales descriptive of teachers and student peer groups tended to load highly on different factors.

Obviously relationships between different aspects of college environments can be described more parsimoniously by these factors than by the original set of 33 college press scales. At the same time, the student and teacher behaviors to which the factors refer are more complex, and therefore less readily communicated, than those to which the individual scales refer. Consequently in the following sections we shall report correlations both for factor scores and individual press scale scores.

## College Press and Changes in Dispositions to Seek Advanced Training

As we have already explained, the adjusted criterion measures consisted of residual scores (discrepancies between actual and predicted criterion scores). Such discrepancies theoretically may arise from any one of three classes of events: (a) random errors of measurement on the pre-college and criterion variables, (b) failure to include one or more relevant pre-college predictors in the regression equations used to obtain predicted criterion scores, or (c) changes during college in the disposition to seek advanced training. To the extent that these discrepancies are due to the first source we would not expect them to correlate with measures of the college environment. Unreliability of measurement will reduce, but not produce, such correlations. One might argue, on the basis of the second theoretical source of error, that one or more uncontrolled, pre-college characteristics could be correlated with the kinds of teachers and peer groups one will seek in college, and that these characteristics might therefore be reflected in the measures of college environments. If we assume that these characteristics are also correlated with actual criterion scores, then the second source of error would provide a basis for predicting correlations between residuals and the measures of college environments. The cogency of this interpretation rests entirely upon the alleged existence of one or more uncontrolled pre-college variables which are correlated not only with obtained criterion scores but also with measures of college environments. However, there was no basis, either in the related literature or in the previous study of this longitudinal sample of students, for identifying such an uncontrolled pre-college variable. Therefore the second theoretical source of error is not at the present time a strong rival hypothesis for predicting correlations between residuals and measures of college environments. Finally, considering the third possibility, if such discrepancies are predominantly due to changes in the disposition to seek advanced training, and if such changes are partly due to the kinds of college press we have measured, then it is clear that there should be significant correlations between adjusted criterion measures and college press variables. If the foregoing argument is sound, most of the reliable variance in the residuals should reflect changes in dispositions to seek advanced training. Moreover, correlations between these indices of change and college press variables should provide tests of the hypothesis that college has effects upon the disposition to seek advanced training.

Table 14 summarizes correlations between adjusted criterion measures and each of the college press scales and factors. For reasons already discussed, the adjusted criterion measures based upon the cross-validation sample were systematically biased measures of changes in motivation for advanced training, and we shall limit our discussion to the adjusted criterion measures based upon the pooled sample of 1,772 graduates.

In spite of the fact that the pooled regression analysis was "loaded" in the direction of finding no effects attributable to college environments, the results clearly indicate that the null hypothesis must be rejected. Moreover, results for the entry and aspiration measures showed considerable congruence. Thus 21 of the 33 scales had significant correlations with at least one criterion, and of these 13 were significantly related to both criteria. Seven of the nine factors based on the "total" sample had significant correlations with at least one criterion, and of these four were significantly related to both criteria. There was little difference in the number of significant correlations for the two criteria. Entry residuals were correlated with 16 of the scales and five of the factors, while aspiration residuals were

Table 14

Correlations between College Press Variables and Adjusted Criterion Measures

| College press factor or scale | College graduates in cross-validation samples only | | | | All graduates (N=1772) | |
|---|---|---|---|---|---|---|
| | Men (N=461) | | Women (N=424) | | | |
| | Entry | Aspiration | Entry | Aspiration | Entry | Aspiration |
| F-1 Excellence of Faculty in Major Field | -.02 | .04 | .01 | .08 | .06* | .05* |
| 2-8 Excellence of faculty teaching | .00 | .05 | .04 | .07 | .08** | .06** |
| 2-4 Faculty enthusiasm for intellectual values | .03 | .07 | -.02 | .03 | .06* | .06* |
| 2-7 Faculty adequacy as positive role models | .08 | .07 | .00 | .08 | .09** | .10** |
| 2-12 Faculty structuring of major field of study | .01 | .01 | .01 | .07 | .03 | .02 |
| 2-3 Faculty press for independent thinking | .01 | .04 | -.02 | .10* | .06* | .08** |
| 2-2 Faculty academic standards | .01 | .02 | -.01 | -.02 | .02 | .01 |
| 2-5 Faculty press for advanced training | .10* | .10* | .04 | .09 | .06** | .09** |
| 2-1 Faculty evaluations of ability | .05 | .05 | .03 | .09 | .11** | .09** |
| 2-19 Student opposition to faculty influence | -.03 | -.05 | -.01 | -.06 | -.07** | -.08** |
| F-2 Lowerclass Humanistic-Intellectual Press | .03 | -.03 | -.02 | .01 | .07** | .04 |
| 1-11 Student press for estheticism | .02 | -.02 | .02 | .04 | .08** | .05 |

Table 14--Continued

| Factor or scale | Men |  | Women |  | All graduates |  |
|---|---|---|---|---|---|---|
|  | Entry | Aspiration | Entry | Aspiration | Entry | Aspiration |
| 1-4 Faculty press for achievement | .02 | -.03 | -.06 | .02 | .04 | .02 |
| 1-7 Faculty press for humanism | .02 | .02 | .03 | .02 | .08** | .06* |
| 1-10 Student press for competition | .00 | -.01 | -.03 | .02 | .01 | .02 |
| 1-8 Faculty press for independence | .04 | .03 | -.06 | -.02 | .03 | .06* |
| 1-12 Student press for reflectiveness | .00 | -.04 | -.06 | -.03 | .05 | .04 |
| 1-14 Student press for intellectualism | .02 | -.03 | -.04 | -.05 | .05* | .02 |
| 1-3 Faculty enthusiasm | .05 | .02 | .02 | -.03 | .07** | .04 |
| F-3 Faculty Press for Compliance and Vocationalism | -.05 | -.07 | .02 | .03 | -.08** | -.08** |
| 1-5 Faculty press for compliance | -.01 | -.05 | .01 | -.04 | -.04 | -.05* |
| 1-9 Faculty press for vocationalism | .01 | -.04 | .03 | .06 | -.05* | -.05* |
| 2-11 Faculty press for compliance | -.12** | -.10* | .02 | -.09 | -.09** | -.10** |
| F-4 Student Camaraderie | -.10* | -.07 | -.13** | -.08 | -.11** | -.07** |
| 2-17 Student playfulness | -.14** | -.12** | -.11* | -.05 | -.09** | -.08** |
| 2-16 Student rebelliousness | -.04 | .00 | -.06 | -.09 | -.05 | .00 |
| 2-15 Student cohesiveness | -.04 | -.03 | -.10 | -.03 | -.04 | -.03 |

Table 14--Continued

| Factor or scale | Men |  | Women |  | All graduates |  |
|---|---|---|---|---|---|---|
|  | Entry | Aspiration | Entry | Aspiration | Entry | Aspiration |
| F-5 Upperclass Student Intellectualism | .01 | .06 | -.03 | .05 | .03 | .10** |
| 2-13 Student press for intellectualism | .07 | .10* | .01 | .09 | .10** | .14** |
| 2-20 Student press for openness to experience | -.01 | .05 | -.07 | .01 | .02 | .08** |
| F-6 Lowerclass Faculty Affiliation | -.11* | -.04 | -.07 | -.06 | .00 | .01 |
| 1-1 Faculty press for affiliation | .03 | .03 | -.08 | -.03 | .04 | .04 |
| 1-6 Faculty supportiveness | .07 | .03 | -.02 | .04 | .06* | .07** |
| 1-2 Faculty directiveness | -.05 | -.02 | -.02 | -.06 | .00 | -.02 |
| F-7 Upperclass Student Competition | .00 | .01 | -.10 | -.05 | -.10** | -.05** |
| 2-14 Student press for unfavorable self-evaluations | .00 | .02 | -.06 | -.01 | -.02 | .01 |
| F-8 Lowerclass Social Conformity | -.12* | -.08 | -.01 | -.12* | -.02 | -.10** |
| 1-13 Student press for social conformity | -.07 | -.01 | -.04 | -.13** | .00 | -.01 |

Table 14--Continued

| Factor or scale | Men |  | Women |  | All graduates |  |
|---|---|---|---|---|---|---|
|  | Entry | Aspiration | Entry | Aspiration | Entry | Aspirations |
| F-9 Upperclass Press for Status | .02 | .04 | -.06 | -.06 | (No corresponding factor) |  |
| 2-18 Student press for status | -.07 | -.08 | -.01 | -.07 | -.04 | -.05* |
| F-10 Affiliation of Faculty in Major Field | .06 | .04 | (No corresponding factor) |  | .02 | .04 |
| 2-10 Faculty press for affiliation | .04 | .03 | -.04 | .07 | .03 | .05* |
| 2-9 Availability of faculty to students | .10* | .03 | -.06 | .04 | .04 | .04 |
| F-10' Inflexibility of Faculty in Major Field | (No corresponding factor) |  | .02 | -.12* | (No corresponding factor) |  |
| 2-11 Faculty press for compliance | (correlations for Scale 2-11 are shown under F-3) |  |  |  |  |  |

$^{*}p < .05$
$^{**}p < .01$

correlated with 18 of the scales and six of the factors.

In general, a greater proportion of the upperclass, than of the lowerclass, scales were correlated with the residuals. This finding was not surprising since more of these students increased their aspirations during the last two, than during the initial, college years.

Lowerclass scales and factors. Only three of the 14 lowerclass scales and none of the factors were related to both entry and aspiration residuals. Lowerclass Faculty Affiliation (Factor 6) was unrelated, although one scale loading highly on this factor (Faculty Supportiveness) was positively correlated with both criteria. Lowerclass Humanistic-Intellectual Press (Factor 2) was positively correlated with more frequent entry than expected on the basis of pre-college characteristics. Exposure to lowerclass faculties who manifested enthusiasm for their work or who had strong interests in the humanities appeared to stimulate students to enter graduate training immediately, while association with peers having strong esthetic and intellectual interests seemed to have the same effect. The significant correlation for Factor 8, which it will be recalled was uninterpretable for the "total" analysis, was apparently due to the contribution to this factor of scale 2-11 (Faculty Press for Compliance) since the latter scale had a significant negative correlation with increases in aspiration.

Upperclass scales and factors. Three of these factors--Excellence of Faculty in Major Field, Student Camaraderie, and

Upperclass Student Competition--were related to both entry and aspiration residuals. The first was positively, and the last two negatively, correlated with increases in disposition to seek advanced training. Seven of the nine scales with high loadings on the factor called Excellence of Faculty in Major Field had significant correlations with both sets of residuals; only Faculty Structuring of Major Field of Study and Faculty Academic Standards were unrelated to changes in dispositions. Student Playfulness was the essential component in producing a negative correlation for the Student Camaraderie factor. Although Factor 7, Upperclass Student Competition, had a significant negative correlation with both sets of residuals, it may be noted that Student Press for Unfavorable Self-evaluations (2-14)--the press scale with the highest loading on this factor--had only insignificant correlations with the residuals. The explanation may be found in examining the other press scales having appreciable loadings on this factor. We find that the press scale, Faculty Evaluations of Ability (2-1), which had a sizeable loading on this factor in the "total" analysis, was significantly related to both sets of residuals. Students who said their own abilities compared unfavorably with those of their peers also tended to have teachers who evaluated them unfavorably, and it is this negative feedback from teachers that presumably accounts for the negative correlation between Factor 7 and increases in motivation for advanced training.

Upperclass Student Intellectualism (Factor 5) was significantly correlated with aspiration, but not with entry, residuals. From the scale correlations it appears that association with peers having strong intellectual interests or manifesting openness to experience encouraged students to raise their degree aspirations.

Multiple-reference factor. It will be recalled that Factor 3 had relatively high loadings on both lowerclass and upperclass scales. This factor, which was called Faculty Press for Compliance and Vocationalism, had negative correlations with both sets of residuals. It is clear that decreases in the strength of the dispositions to seek advanced training were most frequent among students whose teachers exercised close supervisory control over them or who emphasized the practical and vocational aspects of college training.

## College Experiences and Changes in Dispositions

This section provides correlational tests of the hypothesis that other types of undergraduate experiences have effects upon motivation for a scientific or scholarly career. Table 15 presents information about the relative frequency of occurrence--both among entrants and non-entrants--of a variety of college experiences often believed to be related to the development of such career plans. It can be seen that proportionately more entrants than non-entrants reported types of experiences which theoretically should stimulate them to seek advanced training. Proportionately

## Table 15

## College Experiences and Entry into Graduate or Professional School
(College graduates only)

| Reported experience[a] | Percentage reporting given experience[b] | | | | Percentage differences between entrants and non-entrants | |
|---|---|---|---|---|---|---|
| | Men | | Women | | | |
| | Entrants (N=638) (1) | Non-entrants (N=399) (2) | Entrants (N=249) (3) | Non-entrants (N=684) (4) | Men (5) | Women (6) |
| Peers (13) | | | | | | |
| More than half of close friends in college entered graduate or professional school in 1963 | 69.9 | 37.6 | 41.4 | 20.5 | +32.3** | +20.9** |
| Faculty evaluations (16) | | | | | | |
| Undergraduate grade point average of B or higher | 59.7 | 29.1 | 69.1 | 50.3 | +30.6** | +18.8** |
| Awards and honors (15) | | | | | | |
| Named to Dean's list | 58.5 | 38.6 | 59.4 | 49.6 | +19.9** | + 9.8** |
| Graduated with honors | 26.3 | 9.8 | 28.5 | 15.3 | +16.5** | +13.2** |
| Elected to Honor Society (other than Phi Beta Kappa) | 35.1 | 20.3 | 39.8 | 32.1 | +14.8** | + 7.7* |
| Won scholarship on basis of academic ability | 31.8 | 19.0 | 29.3 | 20.0 | +12.8** | + 9.3** |
| Elected to Phi Beta Kappa | 8.5 | 1.3 | 14.9 | 4.2 | + 7.2** | +10.3** |
| No special honors | 19.6 | 32.6 | 18.5 | 26.7 | -13.0** | - 8.2* |

Table 15--Continued

| Reported experience | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Curriculum (11, 15) | | | | | | |
| Participated in Honors Prog. | 23.5 | 10.8 | 26.1 | 13.6 | +12.7** | +12.5** |
| Took one or more graduate level courses as an undergraduate | 32.1 | 21.1 | 38.2 | 26.2 | +11.0** | +12.0** |
| Research experience (14) | | | | | | |
| Never participated in original research | 36.8 | 53.1 | 47.4 | 59.9 | -16.3** | -12.5** |
| Conducted own research project (e.g., senior thesis) | 26.8 | 11.8 | 20.1 | 8.5 | +15.0** | +11.6** |
| Employed by faculty member as a research assistant | 15.7 | 5.3 | 8.4 | 3.8 | +10.4** | + 4.6** |
| Off-campus job working in research | 14.1 | 7.3 | 6.8 | 1.6 | + 6.8** | + 5.2** |
| Participated in summer research training program sponsored by government or private foundation | 8.5 | 2.0 | 4.4 | 1.2 | + 6.5** | + 3.2** |
| Extra-curricular activities (12) | | | | | | |
| Active participant in: | | | | | | |
| Fraternity or sorority | 47.0 | 49.1 | 46.2 | 54.1 | - 2.1 | - 7.9* |
| Campus group concerned with national or world issues | 17.6 | 12.8 | 22.9 | 13.0 | + 4.8* | + 9.9** |

Table 15--Continued

| Reported experience | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Musical or dramatic group | 19.7 | 13.8 | 31.3 | 22.4 | + 5.9* | + 8.9** |
| Editorial staff of campus publication | 11.4 | 8.3 | 14.5 | 9.5 | + 3.1 | + 5.0* |

[a] Numbers in parentheses refer to questions in the Survey Questionnaire (Appendix E).

[b] N's for percentages were often reduced because of non-response to specific items.

*$p < .05$  
**$p < .01$

more of the entrants reported the following "experiences": that most of their "close friends" were bound for graduate or professional school; that they had overall undergraduate grade point averages of B or higher; that they had been successful in winning college honors or election to honorary societies; that they had participated in Honors Programs or graduate-level courses as undergraduates; that they had participated in research training opportunities; and that they had participated in campus groups concerned with national or world issues. The only responses listed in Table 15 which were more typical of non-entrants than of entrants were "no special honors," "never participated in original research," and "active participant in fraternity or sorority." Such differences between percentages are suggestive, though they could of course merely reflect differences in the pre-college dispositions of these groups.

A less ambiguous test of the effects of such experiences is provided by correlating each reported experience with the entry and aspiration residuals. These correlations, reported in Table 16, strongly suggest that most of these relationships cannot be attributed to pre-college differences in dispositions to seek higher academic attainments. Specifically, we find support for the commonly expressed beliefs that the student's disposition to seek advanced training is strengthened by association with peers having high educational aspirations, favorable teacher evaluations of college performance, winning social recognition for intellectual achievement, participation in Honors Programs and graduate-level

## Table 16

Correlations between College Experiences and Adjusted Criterion Measures

| | College graduates in cross-validation sample only | | | | All coll. graduates[b] (N=1654) | |
|---|---|---|---|---|---|---|
| | Men (N=434) | | Women (N=396) | | | |
| Reported experience[a] | 1963 Entry | 1963 Aspiration | 1963 Entry | 1963 Aspiration | 1963 Entry | 1963 Aspiration |
| Peers (13) | | | | | | |
| More than half of close friends in college entered graduate or professional school in 1963 | .20** | .16** | .14** | .11* | .18** | .16** |
| Faculty evaluations (16) | | | | | | |
| Undergraduate grade point average | .24** | .20** | .10* | .08 | .20** | .16** |
| Awards and honors (15) | | | | | | |
| Named to Dean's list | .15** | .11* | .02 | .10* | .11** | .08** |
| Graduated with honors | .13** | .08 | .13** | .11* | .08** | .11** |
| Elected to Honor Society (other than Phi Beta Kappa) | .22** | .17** | .02 | .01 | .11** | .07** |
| Won scholarship on basis of academic ability | .13** | .05 | .01 | .00 | .07** | .05* |
| Elected to Phi Beta Kappa | .05 | .04 | .09 | .11* | .10** | .08** |
| No special honors | -.11* | -.09 | -.01 | -.13** | -.07** | -.09** |
| Curriculum (11, 15) | | | | | | |
| Took one or more graduate level courses as an undergraduate | .05 | .03 | .01 | .16** | .08** | .11** |
| Participated in Honors program | .08 | .06 | .01 | .05 | .07** | .07** |

Table 16--Continued

| Report experience | Men 1963 Entry | Men 1963 Aspiration | Women 1963 Entry | Women 1963 Aspiration | All coll. graduates 1963 Entry | All coll. graduates 1963 Aspiration |
|---|---|---|---|---|---|---|
| Research experience (14) | | | | | | |
| Never participated in original research | -.10* | -.14** | -.07 | -.11* | -.09** | -.08** |
| Conducted own research project (e.g., senior thesis) | .10* | .09 | .03 | .04 | .10** | .10** |
| Employed by a faculty member as a research assistant | .14** | .16** | .02 | .09 | .10** | .12** |
| Off-campus job working in research | .08 | .04 | .15** | .10 | .07** | .04 |
| Participated in summer research training program sponsored by government or private foundation | .11* | .11* | .10 | .05 | .08** | .10** |
| Extra-curricular activities (12) | | | | | | |
| Active participant in: | | | | | | |
| Fraternity or sorority | -.03 | -.05 | -.02 | -.03 | -.01 | -.04 |
| Campus group concerned with national or world issues | .02 | .05 | .04 | -.01 | .04 | .05* |
| Musical or dramatic group | .04 | .02 | .04 | .06 | .05 | .02 |
| Editorial staff or campus publication | -.01 | -.05 | .06 | .07 | .04 | .01 |

[a] Numbers in parentheses refer to questions in the Survey Questionnaire (Appendix E).

[b] See footnote "b" to Table 17.

*p <.05 (two-tailed test)
**p <.01 (two-tailed test)

courses, and by undergraduate participation in research programs and projects.

Of course it would be a mistake to interpret these correlations as proving that each of the experiences significantly related to the residuals caused changes in the disposition to seek advanced training. Consider, for example, the experience of graduating with honors or or being elected to Phi Beta Kappa. These experiences were most likely the consequence, rather than the cause, of changes in dispositions to seek higher educational attainments. Obviously we cannot determine the direction of causation from such correlations. However, the lack of significant correlations between the residuals and some of the other reports of college experiences would cast doubt upon the efficacy of college programs designed to stimulate students to enter scientific or scholarly careers. It is thus reassuring that a variety of causal hypotheses concerning the effects of college experiences (or environments) upon the student's dispositions have been exposed to disconfirmation, and were not disconfirmed. In this sense, and in this sense only, can we claim that these causal hypotheses have been confirmed.

## Major Field of Study

Do students who take their baccalaureates in different fields of study show differential change in motivation for advanced study during the college years? An answer to this question was sought by performing covariance analyses in which the average entry or aspiration criterion scores for major field subgroups were adjusted for subgroup differences with respect to pre-college dispositions to seek advanced training. The assumption of homogeneity of regression appeared to be untenable in the analysis for the aspiration criterion, while it was clearly tenable in the analysis for the entry criterion. However, since the F-ratio for the first of these tests was only of borderline significance (F significant at the .05 but not at the .01 level), we shall report the adjusted means for both criteria, cautioning the reader that interpretation of differences between the adjusted aspiration means is hazardous.

Table 17 shows the major fields of study ranked with respect to the adjusted mean entry scores, where a higher mean indicates unusually large increases in motivation for advanced study. In this grouping of major fields, engineering majors were not included among physical science majors, while pre-medical and pre-dental students were included among majors in the biological sciences.

The F-ratio of 5.29 for testing the significance of differences between the adjusted entry means was highly significant ($p < .001$), and it is clear that students taking their baccalaureates in various major fields differed considerably in the amount that their dispositions to seek advanced study were strengthened during college. It may be, of course, that some students who became interested in higher educational attainments transferred into the higher-ranking fields listed in Table 17, so that for some students selection of a major field of study and exposure to teachers in that discipline

Table 17

Covariance Analyses for Comparing Changes in Dispositions to Seek Advanced Training Among Students in Different Major Fields of Study

| Major field in which student obtained baccalaureate degree[a] | N[b] | Adjusted Mean Criterion Scores | | Rank (with respect to increases in motivation for adv. training) | |
|---|---|---|---|---|---|
| | | Entry | Aspiration | Entry | Aspiration |
| Physical Sciences | 152 | .60 | 1.44 | 1 | 1 |
| Psychology | 72 | .58 | 1.30 | 2 | 3 |
| Biological Sciences | 116 | .54 | 1.41 | 3 | 2 |
| Humanities | 93 | .52 | 1.23 | 4 | 6 |
| History | 118 | .50 | 1.28 | 5 | 4 |
| Social Sciences | 184 | .49 | 1.24 | 6 | 5 |
| English | 139 | .46 | 1.17 | 7 | 7 |
| Fine & Applied Arts | 44 | .45 | 1.01 | 8 | 12 |
| Mathematics & Statistics | 110 | .43 | 1.15 | 9 | 9 |
| Engineering | 137 | .42 | 1.03 | 10 | 11 |
| Misc. fields | 105 | .42 | 1.05 | 11 | 10 |
| Education | 201 | .38 | 1.15 | 12 | 8 |
| Business & Administration | 129 | .27 | .91 | 13 | 13 |
| Health professions | 53 | .24 | .79 | 14 | 14 |
| Total | 1,653 | | | | |

F-ratio for homogeneity of regression = 1.09 ($p > .05$) 2.02 ($p < .05$)
(*df* = 13 and 1,625)

F-ratio for field differences in adjusted means = 5.29 ($p < .001$) 9.05 ($p < .001$)
(*df* = 13 and 1,638)

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[a] An enumeration of specific fields included in each major field category is given in Appendix D.

[b] 118 students who failed to respond to one or more of the questionnaire items described in Table 15 were excluded from the covariance analyses. Exclusion of these subjects apparently had no biasing effects, since correlations between predicted and actual criterion scores were .507 and .485 for the entry and aspiration criterion, respectively--values which agreed perfectly with those for the entire sample (cf. Tables 10 and 12).

may have been a consequence, rather than a cause, of their changed dispositions. An equally plausible hypothesis is that the higher-ranking fields were more effective than the others in stimulating their students to seek advanced training. Both hypotheses may be correct. At any rate, it appears that the physical sciences, psychology, and the biological sciences either (a) are unusually successful in recruiting majors who acquire increased motivation for advanced training during college, or (b) are unusually effective in stimulating their majors to seek such training.

A brief comment should be made on the relationship between these results and those presented in Chapter III, particularly in Figure 3. The latter may be considered as relatively crude comparisons which are more adequately explicated by the covariance analyses. Thus Figure 3 considered only a single pre-college baseline (dichotomized aspiration level in 1959) and showed deflections from this baseline for major field subgroups at various stages of college. On the other hand, the comparisons shown in Table 17 controlled eight pre-college predictors (including initial aspiration level), and consequently represent much more definitive comparisons of changes in the dispositions of students in different fields of study.

# CHAPTER V

# SUMMARY

In this chapter we have several purposes: first, to summarize the principal findings in this study, showing how they add to our knowledge, both methodologically and substantively; second, to discuss rival theoretical interpretations of the results; and third, to make recommendations for improving the recruitment of talented undergraduates into graduate or professional training programs.

## Principal Findings in Relation to Previous Studies

Status of the problem in 1963. Research aimed at identifying types of college environments which are unusually effective in stimulating the achievement motivation of undergraduates dates from about 1930, but it is only within the last few years that investigators have begun to employ sufficiently controlled modes of analysis to permit us to isolate causal relationships. One major approach to the problem is represented by a series of college productivity studies, of which the best-known is probably the study by Knapp and Goodrich (1952). In this mode of analysis the undergraduate institution is regarded as the unit of sampling and an attempt is made to describe the characteristics of institutions which are unusually "high" or "low" with respect to their output of of students who later obtained advanced degrees or other scholarly rewards. Thus colleges have often been compared with respect to their outputs of alumni who later earn the Ph. D., or win distinction by being listed in Who's Who or in American Men of Science. A few of these studies have taken the necessary step of adjusting productivity indices to remove some of the diversities among colleges with respect to entering classes, but it seems fair to say that none included adequate control of college input variables. As a consequence few conclusions about institutional effectiveness can be drawn from them. Major difficulties with the college productivity approach are the lack of complete data on entering classes at a large number of colleges, the problem of controlling for differential undergraduate attrition rates at these institutions, and the problem of defining a time-lag between the baccalaureate and a scholarly or scientific attainment that is equally appropriate for each institution.

A second frequently used mode of analysis consists in treating the individual student as the unit of sampling, conducting longitudinal follow-up studies of samples of college students, and then performing analyses to find out who changes. Thus a number of earlier studies correlated changes in degree aspirations with structural and psychological characteristics of the colleges to which students have been exposed. However, most of these studies cannot be theoretically interpreted with confidence, since groups exhibiting increases in aspirations differed in relevant pre-college characteristics from the groups with decreased, or unchanged, aspirations. As in the productivity studies, it is necessary to control more of the pre-college predictors of the dispositions to seek advanced training. The only studies in this category which appear to have achieved adequate control of pre-college characteristics have been concerned exclusively with structural characteristics of colleges (Astin, 1963a, b). Thus it seems fair to conclude that, although previous studies of the effects of college upon motivation for advanced training have produced a number of promising hypotheses and several valuable methodological insights, none have achieved the objectives we set for our inquiry.

Summary of results. In the present study, a panel of approximately 2,000 college students was surveyed at the beginning of college, at the end of the sophomore year, and again at the completion of college. Multiple regression equations were developed for predicting terminal dispositions to seek advanced graduate or professional training from eight pre-college characteristics. Discrepancies between predicted and obtained criterion scores were used as indices of changes in dispositions, and these indices were correlated with measures of college environments and reported experiences during college. We shall briefly summarize the major hypotheses confirmed and disconfirmed in this analysis, defering discussion of rival hypotheses for explaining the results until a later section.

The following hypotheses were confirmed: (1) Dispositions to seek advanced graduate or professional training are strengthened by exposure to: (a) excellent teachers or role models in the student's major field of study (students exhibiting the greatest increments in such dispositions were those whose major field teachers were said to represent role models worthy of imitation, to put a great deal of energy and thought into doing a good job of teaching, to encourage students to do graduate work, to convey a sense of what it meant to become deeply involved in a discipline, and to help students develop their imaginative or creative capacities); (b) upperclass student subcultures characterized by strong press for intellectualism, or by large proportions of peers planning to seek advanced degrees; (c) major field teachers who provide positive evaluations of the student's ability (students showing the greatest increases in aspirations were those who reported that their teachers gave them feedback which made them realize they had potentialities as contributors in their field, or gave them excellent grades); (d) honors programs or graduate-level courses as undergraduates; (e) undergraduate participation in research projects; and (f) social recognition, or experiences of winning honors or awards, for academic achievement. (2) Dispositions to seek advanced study are weakened by: (a) teachers who demand strict compliance with course or curricular requirements; (b) teachers who stress the practical or vocational values of education; and (c) student peer groups exercising strong press to participate in play or spectator activities.

The following hypotheses were partially confirmed (i.e., confirmed by one, but not both, criterion measures): (1) Dispositions to seek advanced study are strengthened by teachers and peer groups in the initial college years who exert strong humanistic and intellectual press (thus increases in the probability of entering graduate school immediately were positively correlated with faculty enthusiasm and press for humanism, and with student press for estheticism and intellectualism). (2) Dispositions to seek advanced study are weakened by exposure to peer groups exercising strong press for social conformity or strong press for status.

The following hypotheses generally were not confirmed: (1) Dispositions to seek advanced study are strengthened by exposure to: (a) lowerclass faculty affiliation; and (b) affiliation and availability of faculty in the major field of study. (2) Dispositions to seek advanced study are weakened by exposure to upperclass peer groups exerting strong press for unfavorable self-evaluations.

In addition, the following unexpected findings are noteworthy and deserve further study.

First, as the panel members progressed through college there was a striking tendency for more and more of them to say that they planned to seek advanced study. Thus the proportions reporting such plans were 52 per cent at the beginning of college, 61 per cent after two years, and 84 per cent after four years. Similar trends were observed among men and women, students with high and low college aptitude test scores, and among students in each of the broad major fields of study. Since the panel members were highly selected with respect to aptitude level, and perhaps also with respect to interest in higher education (since all of these students responded to three successive mail surveys), these proportions are undoubtedly higher than we would find among all college graduates. But it is a reasonable hypothesis that similar, though less marked, increases would be observable in the entire population of undergraduates who complete college. Such a trend could reflect the attractiveness of academic or professional careers exemplified in the activities of college teachers, or the fact that many students learn during college that one or more years of graduate study are desirable, if not required, for the careers they plan.

Second, there was evidence that the kinds of college press reported by students in their initial college years had little relation to the kind of press reported during the junior and senior years. Despite the fact that some of the lowerclass and upperclass scales contained similar items and were conceptually similar, scales administered on the two occasions had relatively low correlations and typically loaded on different factors. There remains sufficient ambiguity concerning the equivalence of these scales so that we cannot interpret this finding as necessarily indicating that there were typically changes in the college press to which students were exposed during the early and late phases of college. It is a reasonable hypothesis, however, that teacher and peer subcultures in which students participate are quite different for the lowerclassman and the upperclassman.

Methodological implications. These results clearly illustrate a dilemma which arises in using residual scores (discrepancies between predicted and obtained criterion scores) as indices of change. Assuming that the major interest is in the correlation between such residuals and some independently measured variable, then the investigator must decide whether the residuals are properly computed (a) for subjects in the same (standardization) sample for which regression equations, or other types of actuarial models, have been developed to obtain predicted scores, or (b) for subjects in a cross-validation sample. If one computes correlations for the first kind of residuals he removes a spuriously high proportion of variance from the obtained criterion scores, and thereby increases the likelihood of a Type II error in testing the significance of correlations. On the other hand, if one computes the residuals for a cross-validation sample in which there is considerable shrinkage in the accuracy of prediction, then the residuals are necessarily biased measures of change. Thus in the present study, we have seen that cross-validation subjects with high predicted criterion scores tended to have negative residuals, while subjects with low predicted criterion scores tended to have positive residuals. We have argued in Chapter II that such biases are a necessary consequence whenever there is appreciable shrinkage in the accuracy of predictions. The effects of such biases are clearly shown in Table 14 where the correlations for adjusted criterion measures based upon the cross-validation samples are more erratic and less frequently significant than the correlations based upon the "total" standardization sample. We conclude that it will generally be preferable to do such analyses on standardization samples, realizing that one is loading his correlational tests in the direction of committing a Type II error (accepting a null hypothesis when it is false).

## Rival Theoretical Interpretations of the Results

The correlations in Tables 14 and 16 strongly suggest that at least some of the college press and experiences investigated caused students to change their motivation for advanced study. However, there remain two rival hypotheses which may be advanced as alternatives for interpreting these correlations. First, one might argue that the observed associations were due to one or more unmeasured variables which are correlated with both the measures of college environments and the residuals. For example, one might suppose that an uncontrolled, pre-college variable was correlated with the teachers and peer groups students sought out in college, and that this variable was therefore reflected in the measures of college press. Also, if this variable was a predictor of the obtained criterion scores, then it follows that the variable was probably also correlated with the residual scores. Thus the observed correlations theoretically could arise from the effects of an unmeasured "third" variable. The cogency of this rival hypothesis cannot be assessed until a plausible uncontrolled variable is identified. Since there is little basis in the previous literature or in the previous study of this panel of students (Thistlethwaite, 1963) for identifying such an uncontrolled variable, this possibility is not considered a strong rival hypothesis.

A second interpretation is that the types of college press and experiences reported by students were the effects, rather than the causes, of changes in the disposition to seek advanced training. Having resolved to seek graduate or professional training the student may elect to take most of his courses with the more demanding teachers in a department, and to associate with peers who share his new interests and values. This interpretation simply reverses the direction of causality which we have assumed. Campbell (1963) has recently proposed the method of cross-lagged panel correlations for determining the direction of causality in situations where both the hypothetical cause and effect have been measured repeatedly in a time series. Unfortunately, the press scales and instructions successively administered in this study were not identical. Moreover the reports of college press had different time referents than the questions about degree aspirations. Consequently this method could not be used to analyze the present panel data, and it was not possible to rule out this second rival hypothesis.

## Recommendations

If we tentatively interpret the significant correlations in Tables 14 and 16 as indicating the kinds of college press and experiences which strengthen and weaken the disposition to seek advanced training, then the most general recommendation to be made on the basis of this analysis is to maximize the positive, and to minimize the negative, correlates of the adjusted criterion measures. In the case of the press scales having significant correlations with the residuals, the most relevant behaviors for creating a given type of press would be those specified in the press scale items shown in Appendix C. For example, Table 14 shows that the scale, Excellence of Faculty Teaching (2-8), was positively correlated with both sets of residuals, and Appendix C shows that scores on this scale had their highest correlation with responses to the item, "Their lectures clearly revealed they had put a great deal of energy and thought into doing a good job of teaching." One possible use of such information is to select for undergraduate teachers those faculty members who most often exhibit the desired behaviors. Another is to encourage undergraduate instructors to collect the anonymous responses of their own students to such faculty press items; feedback of this kind could be useful in helping instructors to appraise and modify the kinds of press they present to their students.

Since the student press scales refer largely to events which occur in campus dormitories, fraternities, and rooming houses, it is more difficult to imagine how these aspects of the college environment can be manipulated. Perhaps the best first step is the initiation of self-studies in which colleges seek to learn more about the kinds of student subcultures they possess. From such inquiries it may be possible to learn what types of living accommodations,student campus groups, and college-sponsored activities promote the desired types of student subcultures.

Finally, the results suggest the desirability of increasing opportunities for undergraduate exposure to research projects, Honors Programs, graduate-level courses, and social recognition for academic achievement. Some of these measures are costly; others are not. None of them seem likely to produce bad results. They may well offer the best long-range solutions to the problem of recruiting the college teachers we shall need in the coming decades.

# REFERENCES

Adelson, J. The teacher as a model. In N. Sanford (Ed.), The American college. New York: John Wiley, 1962. Pp. 396-417.

Astin, A. W. A re-examination of college productivity. J. educ. Psychol., 1961, 52, 173-178.

Astin, A. W. "Productivity" of undergraduate institutions. Science, 1962, 136, 129-135. (a)

Astin, A. W. Influences on the student's motivation to seek advanced training: Another look. J. educ. Psychol., 1962, 53, 303-309. (b)

Astin, A. W. Differential college effects on the motivation of talented students to obtain the Ph. D. J. educ. Psychol., 1963, 54, 63-71. (a)

Astin, A. W. Undergraduate institutions and the production of scientists. Science, 1963, 141, 334-338. (b)

Astin, A. W., & Holland, J. L. The environmental assessment technique: A way to measure college environments. J. educ. Psychol., 1961, 52, 308-316.

Berelson, B. Graduate education in the United States. New York: McGraw-Hill, 1960.

Brown, D. R. Personality, college environment, and academic productivity. In N. Sanford (Ed.), The American college. New York: John Wiley, 1962. Pp. 536-562.

Campbell, D. T. From description to experimentation: Interpreting trends as quasi-experiments. In C. W. Harris (Ed.), Problems in measuring change. Madison, Wis.: Univer. of Wisconsin Press, 1963. Pp. 212-242.

Campbell, D. T., & Stanley J. C. Experimental designs for research on teaching. In N. L. Gage (Ed.), Handbook of research on teaching. Chicago: Rand McNally, 1963. Pp. 171-246.

Conger, L. J., Jr. College and university enrollment projections. In S. J. Mushkin (Ed.), *Economics of higher education*. U. S. Dept. of Health, Education, and Welfare, Bull., 1962, No. 5. Washington: U. S. Government Printing Office, 1962. Pp. 3-20.

Davis, J. A. *Great aspirations*, Vol. I. Chicago: National Opinion Research Center, Report No. 90, 1963. (Mimeo)

Dirks, A. W., & Anderson, K. E. A study of questionnaire responses from Kansas high school participants and non-participants in the National Merit Scholarship Program. *Kansas Studies in Education*, 1960, 10, No. 2, 28 pp.

Eckert, Ruth E., & Stecklein, J. E. *Job motivations and satisfactions of college teachers*. Cooperative Research Monograph No. 7, U. S. Dept. of Health, Education, and Welfare. Washington: U. S. Government Printing Office, 1961.

Ferguson, G. A. A note on the Kuder-Richardson formula. *Educ. psychol. Measmt*, 1951, 11, 612-615.

Flanagan, J. C. General considerations in the selection of test items and a short method of estimating the product-moment coefficient from tails of the distribution. *J. educ. Psychol*., 1939, 30, 674-680.

Gropper, G. L., & Fitzpatrick, R. *Who goes to graduate school?* Pittsburgh: American Institute for Research, 1959.

Gustad, J. W. *The career decisions of college teachers*. SREB Research Monograph Series No. 2. Atlanta: Southern Regional Education Board, 1960.

Heist, P. A. Diversity in college student characteristics. *J. educ. Sociol*., 1960, 33, 279-291.

Holland, J. L. Undergraduate origins of American scientists. *Science*, 1957, 126, 433-437.

Holland, J. L. Determinants of college choice. *College and University*, 1959, 35, 11-28.

Knapp, R. H., & Goodrich, H. B. *Origins of American scientists.* Chicago: Univer. of Chicago Press, 1952.

Knapp, R. H., & Greenbaum, J. J. *The younger American scholar: His collegiate origins*. Chicago: Univer. of Chicago Press, 1953.

Kunkel, B. W., & Prentice, D. B. The colleges' contributions to intellectual leadership. School and Society, 1939, 50, 600-608.

Kunkel, B. W. The representation of colleges in graduate and professional schools in the United States. Assn. of American Colleges Bulletin, 1941, 27, 449-474.

McConnell, T. R., & Heist, P. A. Do students make the college? College and University, 1959, 35, 442-452.

Newcomb, T. M. Student peer-group influence. In N. Sanford (Ed.), The American college. New York: John Wiley, 1962. Pp. 469-488.

Nunnally, J. C., Thistlethwaite, D. L., & Wolfe, Karen. Factored scales for measuring characteristics of college environments. Educ. psychol. Measmt, 1963, 23, 239-248.

Pace, C. R. Five college environments. College Board Review, 1960, 41, 24-28.

Pace, C. R. College and university environment scales: Technical manual. Princeton, N. J.: Educational Testing Service, 1963.

Pace, C. R., & Stern, G. G. An approach to the measurement of psychological characteristics of college environments. J. educ. Psychol., 1958, 49, 269-297.

Prentice, D. B., & Kunkel, B. W. The colleges' contributions to intellectual leadership. School and Society, 1930, 32, 594-600.

Prentice, D. B., & Kunkel, B. W. The colleges' contributions to intellectual leadership--II. School and Society, 1931, 32, 280-282.

Stern, G. G. College characteristics index, preliminary manual. Syracuse, N. Y.: Author, 1958. (Mimeo)

Stern, G. G. Environments for learning. In N. Sanford (Ed.), The American college. New York: John Wiley, 1962. Pp. 690-730.

Stuit, D. C., Helmstadter, G. C., & Fredericksen, N. Survey of college evaluation methods and needs. Princeton, N. J.: Educational Testing Service, 1956.

Tatsuoka, M. M., & Tiedeman, D. V. Statistics as an aspect of scientific method in research on teaching. In N. L. Gage (Ed.), Handbook of research on teaching. Chicago: Rand McNally, 1963. Pp. 142-170.

Thielens, W., Jr. Some comparisons of entrants to medical and law school. In R. K. Merton et al. (Eds.), The student-physician: Introductory studies in the sociology of medical education. Cambridge, Mass.: Harvard Univer. Press, 1957. Pp.131-152.

Thistlethwaite, D. L. College environments and the development of talent. Science, 1959, 130, 71-76. (a)

Thistlethwaite, D. L. College press and student achievement. J. educ. Psychol., 1959, 50, 183-191. (b)

Thistlethwaite, D. L. College press and changes in study plans of talented students. J. educ. Psychol., 1960, 51, 222-234.

Thistlethwaite, D. L. Fields of study and development of motivation to seek advanced training. J. educ. Psychol., 1962, 53, 53-64. (a)

Thistlethwaite, D. L. Rival hypotheses for explaining the effects of different learning environments. J. educ. Psychol., 1962, 53, 310-315. (b)

Thistlethwaite, D. L. Recruitment and retention of talented college students. Final Report of Projects 657 and 657A, Office of Education, U. S. Dept. of Health, Education, and Welfare. January, 1963. (Mimeo)

Traxler, A. E. An appraisal of American colleges on the basis of men graduates listed in Who's Who in America. Paper presented at the meeting of the American Assn. for the Advancement of Science, Indianapolis, December 29, 1957.

Visher, S. S. Scientists starred 1903-1943 in "American Men of Science." Baltimore: Johns Hopkins Univer. Press, 1947.

# APPENDIX A

## Table A-1

## Colleges and Universities Attended by Respondents to Fall, 1963 Survey

| | | Number of Respondents | | | |
|---|---|---|---|---|---|
| | | Entering given institution in Fall, 1959 | Naming in Fall, 1963 given institution as the last undergraduate school attended | | |
| State | College or University | (1) | Graduates (2) | Non-graduates (3) | Total (4) |
| Alabama | Alabama Polytechnic Institute | 18 | 9 | 8 | 17 |
| | Univ. of Alabama | 24 | 15 | 10 | 25 |
| Arizona | Univ. of Arizona | 23 | 16 | 5 | 21 |
| Arkansas | Univ. of Arkansas | 14 | 9 | 5 | 14 |
| California | San Diego State College | 24 | 8 | 14 | 22 |
| | San Jose State College | 23 | 3 | 15 | 18 |
| | Stanford Univ. | 28 | 18 | 8 | 26 |
| | Univ. of California (all campuses) | 27 | 18 | 13 | 31 |
| | Univ. of Southern California | 17 | 10 | 5 | 15 |
| Colorado | Colorado State Univ. | 11 | 4 | 7 | 11 |
| | Univ. of Colorado | 17 | 11 | 7 | 18 |
| Connecticut | Univ. of Connecticut | 27 | 19 | 6 | 25 |
| | Yale Univ. | 25 | 24 | 1 | 25 |
| Delaware | Univ. of Delaware | 12 | 7 | 5 | 12 |
| District of Columbia | Georgetown Univ. | 20 | 16 | 3 | 19 |

Table A-1--Continued

| State | College or University | (1) | (2) | (3) | (4) |
|---|---|---|---|---|---|
| Florida | Florida State Univ. | 20 | 12 | 3 | 15 |
| | Univ. of Florida | 15 | 10 | 8 | 18 |
| | Univ. of Miami | 11 | 8 | 1 | 9 |
| Georgia | Emory Univ. | 18 | 10 | 4 | 14 |
| | Georgia Institute of Technology | 26 | 11 | 12 | 23 |
| | Univ. of Georgia | 19 | 12 | 8 | 20 |
| Hawaii | Univ. of Hawaii | 21 | 8 | 13 | 21 |
| Illinois | Loyola Univ. | 18 | 13 | 6 | 19 |
| | Northern Illinois Univ. | 15 | 9 | 3 | 12 |
| | Northwestern Univ. | 24 | 22 | 5 | 27 |
| | Southern Illinois Univ. | 18 | 10 | 8 | 18 |
| | Univ. of Chicago | 19 | 12 | 3 | 15 |
| | Univ. of Illinois | 22 | 15 | 6 | 21 |
| Indiana | Ball State Teachers College | 16 | 13 | 2 | 15 |
| | DePauw Univ. | 28 | 15 | 4 | 19 |
| | Indiana Univ. | 22 | 17 | 7 | 24 |
| | Purdue Univ. | 28 | 17 | 10 | 27 |
| | Univ. of Notre Dame | 18 | 13 | 4 | 17 |
| | Valparaiso Univ. | 25 | 14 | 6 | 20 |
| Iowa | Iowa State Univ. | 24 | 14 | 9 | 23 |
| | Iowa State Teachers College | 19 | 13 | 1 | 14 |
| | State Univ. of Iowa | 16 | 15 | 4 | 19 |
| Kansas | Kansas State Univ. | 24 | 10 | 10 | 20 |
| | Univ. of Kansas | 23 | 13 | 12 | 25 |
| Kentucky | Univ. of Kentucky | 29 | 14 | 11 | 25 |
| | Univ. of Louisville | 16 | 9 | 16 | 25 |

Table A-1--Continued

| State | College or University | (1) | (2) | (3) | (4) |
|---|---|---|---|---|---|
| Louisiana | Louisiana State Univ. | 16 | 10 | 10 | 20 |
| | Loyola Univ. | 16 | 12 | 3 | 15 |
| | Tulane Univ. | 23 | 15 | 2 | 17 |
| Maine | Univ. of Maine | 21 | 13 | 5 | 18 |
| Maryland | United States Naval Academy | 13 | 11 | -- | 11 |
| | Univ. of Maryland | 19 | 12 | 8 | 20 |
| Massachusetts | Boston College | 24 | 20 | -- | 20 |
| | Boston Univ. | 20 | 20 | 6 | 26 |
| | Harvard Univ. | 31 | 23 | 5 | 28 |
| | Massachusetts Institute of Technology | 32 | 20 | 7 | 27 |
| | Northeastern Univ. | 25 | -- | 22 | 22 |
| | Smith College | 32 | 27 | 1 | 28 |
| | Tufts Univ. | 6 | 6 | -- | 6 |
| | Univ. of Massachusetts | 17 | 13 | 2 | 15 |
| | Wellesley College | 20 | 18 | 2 | 20 |
| Michigan | Central Michigan Univ. | 15 | 4 | 6 | 10 |
| | Michigan State Univ. | 21 | 11 | 11 | 22 |
| | Univ. of Detroit | 24 | 12 | 10 | 22 |
| | Univ. of Michigan | 29 | 20 | 9 | 29 |
| | Wayne State Univ. | 23 | 16 | 7 | 23 |
| | Western Michigan Univ. | 23 | 15 | 7 | 22 |
| Minnesota | Carleton College | 23 | 16 | -- | 16 |
| | Univ. of Minnesota | 18 | 11 | 10 | 21 |
| Mississippi | Mississippi State Univ. | 16 | 12 | 4 | 16 |
| | Mississippi State College for Women | 15 | 6 | 1 | 7 |
| | Univ. of Mississippi | 20 | 18 | 4 | 22 |

Table A-1--Continued

| State | College or University | (1) | (2) | (3) | (4) |
|---|---|---|---|---|---|
| Missouri | St. Louis Univ. | 14 | 8 | 4 | 12 |
| | Univ. of Missouri | 25 | 12 | 8 | 20 |
| | Washington Univ. | 18 | 12 | 5 | 17 |
| Nebraska | Univ. of Nebraska | 28 | 15 | 11 | 26 |
| New Jersey | Dartmouth College | 19 | 16 | 2 | 18 |
| | Princeton Univ. | 31 | 26 | 4 | 30 |
| | Rutgers, The State Univ. | 17 | 11 | 4 | 15 |
| New Mexico | Univ. of New Mexico | 12 | 6 | 6 | 12 |
| New York | Brooklyn College | 21 | 15 | 6 | 21 |
| | City College | 23 | 19 | 8 | 27 |
| | Columbia Univ. | 24 | 19 | 5 | 24 |
| | Cornell Univ. | 28 | 14 | 10 | 24 |
| | Hunter College | 26 | 11 | 7 | 18 |
| | New York Univ. | 17 | 14 | 6 | 20 |
| | Queens College | 24 | 20 | 3 | 23 |
| | Rensselaer Polytechnic Institute | 19 | 11 | 5 | 16 |
| | State Univ. of New York | 23 | 23 | 6 | 29 |
| | Syracuse Univ. | 24 | 17 | 3 | 20 |
| | Univ. of Buffalo | 19 | 4 | 3 | 7 |
| | Univ. of Rochester | 24 | 16 | 2 | 18 |
| North Carolina | Davidson College | 17 | 15 | -- | 15 |
| | Duke Univ. | 29 | 18 | 5 | 23 |
| | Univ. of North Carolina (Chapel Hill) | 17 | 18 | 6 | 24 |
| | State College of Agriculture and Engineering (Raleigh) | 30 | 16 | 7 | 23 |
| | Univ. of North Carolina Woman's College | 26 | 18 | 4 | 22 |
| | Wake Forest College | 15 | 10 | 1 | 11 |

Table A-3--Continued

| State | College or University | (1) | (2) | (3) | (4) |
|---|---|---|---|---|---|
| Ohio | Bowling Green State Univ. | 19 | 15 | 2 | 17 |
| | Kent State Univ. | 25 | 15 | 8 | 23 |
| | Miami Univ. | 21 | 10 | 7 | 17 |
| | Oberlin College | 18 | 15 | 2 | 17 |
| | Ohio State Univ. | 19 | 17 | 14 | 31 |
| | Ohio Univ. | 29 | 16 | 6 | 22 |
| | Ohio Wesleyan Univ. | 21 | 12 | 1 | 13 |
| | Univ. of Cincinnati | 20 | 11 | 9 | 20 |
| | Univ. of Dayton | 14 | 10 | 3 | 13 |
| Oklahoma | Oklahoma State Univ. | 20 | 13 | 6 | 19 |
| | Univ. of Oklahoma | 23 | 10 | 8 | 18 |
| | Univ. of Tulsa | 11 | 6 | 6 | 12 |
| Oregon | Oregon State College | 27 | 17 | 4 | 21 |
| | Univ. of Oregon | 25 | 15 | 8 | 23 |
| Pennsylvania | Carnegie Institute of Technology | 18 | 11 | 1 | 12 |
| | Drexel Institute of Technology | 14 | 5 | 1 | 6 |
| | Gettysburg College | 14 | 13 | -- | 13 |
| | Lehigh Univ. | 14 | 8 | 3 | 11 |
| | Pennsylvania State Univ. | 27 | 14 | 11 | 25 |
| | Temple Univ. | 23 | 15 | 7 | 22 |
| | Univ. of Pennsylvania | 22 | 19 | 3 | 22 |
| | Univ. of Pittsburgh | 22 | 17 | 4 | 21 |
| | Villanova Univ. | 15 | 11 | 1 | 12 |
| Rhode Island | Brown Univ. | 23 | 18 | 1 | 19 |
| | Univ. of Rhode Island | 17 | 13 | 3 | 16 |
| South Carolina | Clemson Agricultural College | 18 | 13 | 4 | 17 |
| | Univ. of South Carolina | 17 | 11 | 6 | 17 |

Table A-1--Continued

| State | College or University | (1) | (2) | (3) | (4) |
|---|---|---|---|---|---|
| Tennessee | Memphis State Univ. | 16 | 11 | 7 | 18 |
| | Univ. of Tennessee | 27 | 10 | 14 | 24 |
| | Vanderbilt Univ. | 20 | 18 | -- | 18 |
| Texas | Baylor Univ. | 26 | 20 | 2 | 22 |
| | North Texas State College | 16 | 8 | 7 | 15 |
| | Rice Institute | 23 | 20 | 1 | 21 |
| | Southern Methodist Univ. | 19 | 16 | 3 | 19 |
| | Texas Agricultural and Mechanical College | 18 | 11 | 6 | 17 |
| | Texas Technological College | 20 | 9 | 10 | 19 |
| | Univ. of Texas | 17 | 15 | 7 | 22 |
| Utah | Brigham Young Univ. | 18 | 8 | 6 | 14 |
| | Univ. of Utah | 19 | 7 | 10 | 17 |
| Virginia | College of William and Mary | 25 | 18 | 3 | 21 |
| | Virginia Polytechnic Institute | 26 | 9 | 12 | 21 |
| Washington | Washington State Univ. | 28 | 13 | 12 | 25 |
| | Univ. of Washington | 15 | 10 | 6 | 16 |
| West Virginia | Marshall College | 21 | 11 | 8 | 19 |
| | West Virginia Univ. | 20 | 10 | 10 | 20 |
| Wisconsin | Marquette Univ. | 25 | 18 | 5 | 23 |
| | Univ. of Wisconsin | 28 | 17 | 11 | 28 |
| | Subtotal | 2919 | 1870 | 830 | 2700 |
| Other Institutions | | -- | 69 | 94 | 163 |
| Unknown (no response) | | -- | 31 | 25 | 56 |
| | Total | 2919 | 1970 | 949 | 2919 |

## APPENDIX B

## SCALES FOR ASSESSING FACULTY AND STUDENT PRESS OF LOWERCLASSMEN

Table B-1 shows items in each of the 14 scales included in the June, 1961 mail survey, and provides additional information about the scale reliabilities, item marginals, and item total-score correlations. Item numbers indicate the position of each item in the printed survey questionnaire. Normative data is based upon a random sample of the 4,330 respondents to the 1961 mail survey. The instructions used in administering these scales were as follows:

"The purpose of this inventory is to obtain information about the ways in which college environments differ from one another. The statements below describe the kinds of courses emphasized, the characteristics of teachers and courses, the activities and attitudes of students, etc. You are to decide which statements are characteristic of your college or university and which are not. Your answers should tell us what you believe the college environment is like rather than what you might personally prefer.

"You will find many statements that are partly true and partly false as descriptions of your college or university. In these cases you are to decide whether the statement is mostly true or mostly false of the college environment as you have observed it. In a few cases you may not have had an opportunity to directly observe whether the characteristic described is true or false, and for these items you are asked to give your impressions on the basis of conversations with other students or with teachers. To be sure your responses can give only an approximate description of your college. In many instances you will feel that your responses should be qualified, but please make only one response to each item. Previous experience with this type of inventory has shown that student observers at the same college often exhibit good agreement in their descriptions, and that the descriptions of various colleges often differ markedly from one another.

"Your responses will be kept confidential.

DIRECTIONS: Fill in the blanks at the top of the special answer sheet. Be sure to write in the name of the college you are describing. If you have attended more than one college, please describe the institution in which you first enrolled as a full-time college student. Then, as you read each statement in this booklet circle the T or F for the corresponding item on the answer sheet.

You should circle

T - when you believe the statement is generally TRUE, or mostly true, as a description of your college.

F - when you believe the statement is generally FALSE, or mostly false, as a description of your college.

PLEASE DO NOT OMIT ANY ITEMS

When you have completed the inventory, and filled in both sides of the answer sheet, please discard this booklet and return only the answer sheet and the write-in questionnaire in the enclosed self-addressed, stamped envelope."

Table B-1

## SCALES AND ITEMS INCLUDED IN LOWERCLASS PRESS SCALES

**Scale 1: Faculty press for Affiliation**

| | | Item statistics‡ | |
|---|---|---|---|
| | Scale reliability: | .85 | |
| | | % | r |
| 1. | Professors frequently go out of their way to establish friendly relations with the students. (T) | 44% | .77 |
| 15. | Faculty members are available to students only during scheduled office hours. (F) | 46% | .75 |
| 21. | An open display of emotion would embarrass most professors. (F) | 60% | .50 |
| 35. | The professors seem to have little time for conversation with the students. (F) | 68% | .82 |
| 41. | The faculty here takes a personal interest in students and their work. (T) | 50% | .91 |
| 55. | The professors really talk with the students, not just at them. (T) | 57% | .87 |
| 61. | Instructors seem personally interested in their students. (T) | 50% | .91 |
| 75. | As a general rule students here almost never get to know their teachers well enough to count them as personal friends. (F) | 29% | .84 |
| 81. | Instructors are typically friendly and sympathetic in manner. (T) | 74% | .77 |
| 95. | The faculty keeps pretty much to itself and rarely fraternizes with students. (F) | 47% | .91 |

**Scale 2: Faculty press for Directiveness**

| | | % | r |
|---|---|---|---|
| | Scale reliability: | .60 | |
| 3. | Instructors seldom outline the day's lecture or discussion at the beginning of the class period. (F) | 46% | .60 |
| 17. | It is hard to prepare for examinations because students seldom know what will be expected of them. (F) | 79% | .57 |
| 23. | It is easy to take clear and systematic notes in courses here. (T) | 70% | .66 |
| 37. | In most courses students do not know what the topic of the next lecture will be because the lecturer rarely announces it. (F) | 77% | .65 |
| 43. | Instructors clearly explain the goals and purposes of their courses. (T) | 66% | .64 |
| 57. | Teachers usually distribute, or have students buy, a course syllabus which summarizes the material to be covered during the term. (T) | 50% | .60 |

| | | % | r |
|---|---|---|---|
| 63. | Most courses are meticulously organized and progress systematically from topic to topic. (T) | 65% | .63 |
| 77. | The faculty tries hard to avoid giving lectures in class so that students can participate extensively in class discussion. (F) | 84% | .15 |
| 83. | Assignments are usually clear and specific, making it easy for students to plan their studies effectively. (T) | 80% | .72 |
| 97. | Teachers here rarely attempt to summarize the day's lecture at the end of the period. (F) | 34% | .65 |
| | **Scale 3: Faculty press for Enthusiasm** | | |
| | Scale reliability: | .83 | |
| 5. | The campus atmosphere does not seem to be very stimulating for faculty members. (F) | 72% | .61 |
| 19. | Lectures are frequently routine and duplicate material in the text. (F) | 44% | .57 |
| 25. | Many of the instructors seem bored with their teaching assignments. (F) | 74% | .80 |
| 39. | Faculty members put a lot of energy and enthusiasm into their teaching. (T) | 66% | .88 |
| 45. | Instructors really get students interested in their subjects (T) | 44% | .80 |
| 59. | The outstanding traits of the faculty are their dedication to, and enthusiasm for, their work. (T) | 60% | .85 |
| 65. | Professors typically exhibit great interest and enthusiasm in their subjects. (T) | 66% | .85 |
| 79. | Many of the professors here seem discouraged about the job rewards associated with college teaching. (F) | 71% | .71 |
| 85. | Many lectures are delivered in a monotone with little inflection or emphasis. (F) | 61% | .79 |
| 99. | It is obvious that the teachers here have fallen in love with the search for knowledge. (T) | 45% | .74 |
| | **Scale 4: Faculty press for Achievement** | | |
| | Scale reliability: | .69 | |
| 7. | The faculty is outstanding for the emphasis it places on student scholarship and research. (T) | 50% | .75 |

| | | % | r |
|---|---|---|---|
| 27. | The faculty shows very little interest in the methods and philosophy of science. (F) | 83% | .56 |
| 47. | Professors frequently encourage qualified students to do graduate work. (T) | 84% | .66 |
| 67. | Personality, pull, and bluff get students through many courses(F) | 65% | .65 |
| 87. | The student can pass most courses just by learning what's in the textbook. (F) | 34% | .69 |
| 101. | There aren't very many courses here which demand excellent performance by all students. (F) | 52% | .71 |
| 109. | The professors are really skillful at getting students to work to the limit of their capacities. (T) | 27% | .78 |
| 117. | Teachers here expect, and usually get, excellence in the academic performance of students. (T) | 41% | .76 |
| 125. | Instructors typically avoid presenting more material than the student can handle. (F) | 67% | .43 |
| 133. | The faculty frequently encourages students to enroll in the Honors Program or in similar advanced courses of study. (T) | 70% | .63 |

Scale 5: Faculty press for Compliance

Scale reliability: .57

| | | % | r |
|---|---|---|---|
| 9. | Term papers and course projects often rate an A even though they do not fulfill the letter of the instructors assignment.(F) | 84% | .52 |
| 29. | The faculty often permits students to deviate somewhat from published curriculum requirements in their course work. (F) | 48% | .67 |
| 49. | Instructors are relatively permissive when it comes to enforcing rules regarding course prerequisites. (F) | 57% | .65 |
| 69. | Instructors go out of their way to be tolerant of students who do not comply with course requirements. (F) | 84% | .54 |
| 89. | Frequent tests are given in most courses. (T) | 59% | .63 |
| 103. | Teachers usually mark down students who complete assignments late. (T) | 89% | .51 |
| 111. | Students absent from class must present excuses when they return. (T) | 26% | .52 |

| | | % | r |
|---|---|---|---|
| 119. | Instructors often waive requirements for admission to their courses. (F) | 75% | .70 |
| 127. | Faculty advisors are very reluctant to approve any exceptions in the curriculum requirements for graduation. (T) | 76% | .66 |
| 135. | The faculty usually demands strict compliance with all course requirements. (T) | 84% | .72 |

**Scale 6: Faculty press for Supportiveness**

Scale reliability: .69

| | | | |
|---|---|---|---|
| 11. | Instructors often discuss the student's goals with them and try to help them discover their special talents. (T) | 38% | .66 |
| 31. | The faculty often trys to show qualified students how they can become creative or productive workers in their field of study. (T) | 70% | .65 |
| 51. | Students having difficulty with their courses can easily get special tutoring or counsel from the department's instructors. (T) | 66% | .69 |
| 71. | Teachers are sensitive to student complaints and grievances and frequently try to remedy the situation. (T) | 59% | .77 |
| 91. | Professors rarely try to spare the student's feelings when giving negative evaluations. (F) | 49% | .50 |
| 105. | Instructors here are sometimes sarcastic in class. (F) | 23% | .49 |
| 113. | Counseling and guidance services are really personal, patient, extensive. (T) | 55% | .69 |
| 121. | Instructors are sometimes careless about acquainting students with curriculum requirements. (F) | 60% | .66 |
| 129. | The faculty expects the undergraduate to get by almost completely on his own resources. (F) | 35% | .67 |
| 137. | Faculty advisors usually restrict appointments for planning study programs to one or two periods during the year. (F) | 53% | .67 |

**Scale 7: Faculty press for Humanism**

Scale reliability: .76

| | | | |
|---|---|---|---|
| 13. | Very few of the professors here try to get students interested in the humanities. (F) | 70% | .77 |
| 33. | Student interest in understanding and criticizing important works in art, music, and drama is encouraged by the faculty. (T) | 65% | .76 |

| | | % | r |
|---|---|---|---|
| 53. | Faculty advisors seem unaware that a well-rounded program of study includes courses in the arts and humanities. (F) | 84% | .54 |
| 73. | Instructors here have very little interest in drama or the arts. (F) | 80% | .72 |
| 93. | Instructors here continually go out of their way to try to liberate the student from his prejudices and provincialisms. (T) | 48% | .69 |
| 107. | The faculty frequently encourages the student to take courses in the humanities. (T) | 72% | .81 |
| 115. | Professors here show no interest in tracing the sources of their specialized field of study to philosophical or humanistic movements in the history of ideas. (F) | 65% | .80 |
| 123. | The faculty discourages students from specializing in their major field during the first two years. (T) | 56% | .43 |
| 131. | Professors who are true scholars in the humanities would feel out of place among faculty members here. (F) | 84% | .70 |
| 139. | All students here are expected to take numerous elective courses in English, literature, History, or Philosophy. (T) | 56% | .83 |

Scale 8: Faculty press for Independence

Scale reliability: .70

| | | | |
|---|---|---|---|
| 14. | There are many facilities and opportunities for individual creative activity. (T) | 68% | .58 |
| 34. | The faculty is usually too busy to invent ways of encouraging initiative among students. (F) | 54% | .74 |
| 54. | There is little opportunity here for pursuing independent study under the supervision of faculty members. (F) | 60% | .69 |
| 74. | The college rarely encourages students to undertake independent projects or theses. (F) | 58% | .83 |
| 94. | In class discussions, papers, and exams the main emphasis is on the development of critical judgment. (T) | 64% | .62 |
| 108. | A well-reasoned report can rate an A grade here even though its viewpoint is opposed to the professors. (T) | 85% | .60 |
| 116. | The faculty tends to be critical of unconventional and novel ideas in papers and reports. (F) | 78% | .50 |
| 124. | The faculty often feels free to go into absolutely anything in trying to encourage students to develop their interests. (T) | 48% | .67 |

| | | % | r |
|---|---|---|---|
| 132. | Professors here conscientiously attempt to cover the sourse syllabus and do not encourage departures from the planned course of study. (F) | 39% | .52 |
| 140. | Many instructors "play it by ear" adjusting assignments and projects to the individual student's interests. (T) | 22% | .70 |

### Scale 9: Faculty press for Vocationalism

Scale reliability: .76

| | | % | r |
|---|---|---|---|
| 12. | Professors seem to think that the chief purpose of a college education is to provide technical training. (T) | 19% | .36 |
| 32. | The academic atmosphere is practical, emphasizing efficiency and usefulness. (T) | 60% | .71 |
| 52. | The college offers many really practical courses designed to prepare the student for his occupation. (T) | 77% | .82 |
| 72. | Very few of the courses here will be useful to students who go into business or industry. (F) | 86% | .68 |
| 92. | Education here tends to make students more practical and realistic. (T) | 71% | .81 |
| 106. | Very few instructors try to give the student the practical training he will need in his career field (F) | 72% | .78 |
| 114. | Very few of the courses here aim at preparing the student for his vocation. (F) | 84% | .70 |
| 122. | The academic atmosphere is not very helpful to the student who wants to specialize in business, engineering management or other practical affairs. (F) | 80% | .68 |
| 130. | Most instructors are very practical and pragmatic in their approach to college training. (T) | 68% | .74 |
| 138. | Most professors here refute the idea that the main purpose of college education is to prepare the student for his vocation. (F) | 56% | .67 |

### Scale 10: Student press for Competition

Scale reliability: .80

| | | % | r |
|---|---|---|---|
| 10. | There is a great deal of rivalry for grades among students (T). | 61% | .82 |

| | | % | r |
|---|---|---|---|
| 30. | The competition for high achievement is intense. (T) | 58% | .90 |
| 50. | The high calibre of students here puts a lot of pressure on one. (T) | 52% | .80 |
| 70. | Most students here are quite aware of the competition to get into graduate school. (T) | 69% | .72 |
| 90. | Many students here are content just to get by. (F) | 35% | .67 |
| 104. | The competition for special honors in very rough. (T) | 79% | .73 |
| 112. | There are relatively few really capable students here. (F) | 92% | .49 |
| 120. | Students here attach little importance to how well they do relative to others in their class. (F) | 79% | .73 |
| 128. | Good grades are of little concern to most students here. (F) | 86% | .67 |
| 136. | Very few students here feel they are in competition with each other. (F) | 69% | .84 |

**Scale 11: Student press for Estheticism**

Scale reliability: .80

| | | | |
|---|---|---|---|
| 8. | Students here tend to avoid courses which deal with broad human values or life goals. (F) | 74% | .70 |
| 28. | Student rooms are more likely to be decorated with pennants and pin-ups than with paintings, carvings, mobiles, fabrics, etc. (F) | 44% | .65 |
| 48. | When students get together they often talk about trends in art, music or the theater. (T) | 25% | .71 |
| 68. | Humanities courses are often elected by students majoring in other areas. (T) | 71% | .62 |
| 88. | There is a lot of interest here in student theatrical groups. (T) | 53% | .67 |
| 102. | There is a lot of interest here in poetry, music, painting, sculpture, architecture, etc. (T) | 42% | .89 |
| 110. | Concerts and art exhibits always draw big crowds of students (T) | 41% | .77 |
| 118. | A student who insists on analyzing and classifying art and music is likely to be regarded as a little odd. (F) | 59% | .79 |

|  |  | % | r |
|---|---|---|---|
| 126. | Most students here prefer to take only courses closely related to their specialized fields of study. (F) | 47% | .64 |
| 134. | A lecture by an outstanding poet or dramatist would draw very few students here. (F) | 63% | .79 |

Scale 12: Student press for Reflectiveness

Scale reliability: .75

|  |  |  |  |
|---|---|---|---|
| 6. | The student newspaper rarely carries articles intended to stimulate discussion of philosophical or ethical matters. (F) | 71% | .52 |
| 20. | There is very little student interest in the philosophy and methods of science. (F) | 69% | .67 |
| 26. | Books dealing with psychological problems or personal values are widely read and discussed. (T) | 36% | .77 |
| 40. | Most of my associates believe the chief purpose of college is to provide training useful in one's vocation. (F) | 35% | .48 |
| 46. | Long, serious philosophical discussions are common among the students. (T) | 46% | .74 |
| 60. | It is usually quite easy to get a group decision here without much discussion. (F) | 71% | .54 |
| 66. | A controversial speaker always stirs up a lot of student discussion. (T) | 77% | .69 |
| 80. | There would be a capacity audience for a lecture by an outstanding philosopher or theologian. (T) | 53% | .74 |
| 86. | Students here have very little interest in the analysis of value systems, and the relatively of societies and ethics. (F) | 65% | .86 |
| 100. | Students here frequently debate social and political issues far into the night. (T) | 54% | .73 |

Scale 13: Student press for Social Conformity

Scale reliability: .63

|  |  |  |  |
|---|---|---|---|
| 4. | Students who fail to develop social skills will soon feel out of place on this campus. (T) | 45% | .68 |
| 18. | Articulateness and sophistication are highly respected by students. (T) | 47% | .57 |

| | | % | r |
|---|---|---|---|
| 24. | Students here don't seem to care about their personal appearance. (F) | 82% | .75 |
| 38. | Most students here have very little interest in developing well-rounded personalities. (F) | 78% | .72 |
| 44. | Students think about dressing appropriately and interestingly for different occasions--classes, social events, sports, and other affairs. (T) | 80% | .78 |
| 58. | Most students here have definite ideas about the kind of cultivated and sensitive person they wish to become. (T) | 60% | .37 |
| 64. | Very few students are concerned about being properly groomed(F) | 82% | .72 |
| 78. | The most popular students here are usually those who are least aware of social customs. (F) | 92% | .40 |
| 84. | Ignorance of social customs is no handicap to the student here.(F) | 64% | .82 |
| 98. | Students place high value upon the ability to interact effectively with others. (T) | 81% | .73 |

Scale 14: Student press for Intellectualism

Scale reliability: .59

| | | | |
|---|---|---|---|
| 2. | Most students look for variety and novelty in summer jobs or activities. (T) | 63% | .48 |
| 16. | Most of my associates admire their teachers. (T) | 58% | .72 |
| 22. | Students often burlesque their instructors attitudes and mannerisms with wild caricatures. (F) | 56% | .40 |
| 36. | Most students are grateful to the faculty for showing them a way of life worthy of imitation. (T) | 37% | .66 |
| 42. | Students spend a lot of time planning their intellectual careers. (T) | 38% | .70 |
| 56. | Very few students here are planning to do graduate work.(F) | 68% | .63 |
| 62. | Most of my friends here don't do much except go to classes and study. (F) | 84% | .23 |
| 76. | It is hard to find any students in the library on Friday nights. (F) | 70% | .59 |

| | % | r |
|---|---|---|
| 82. Students respond enthusiastically to a colorful and dramatic speaker. (T) | 90% | .55 |
| 96. Students here rarely get excited about a campus speaker. (F) | 55% | .81 |

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≠Percentages shown represent percentages of a random sample (N=871) of examinees answering each item in keyed direction (T or F, shown in parentheses). The correlations shown represent correlations between item response and total scale scores. The correlations are estimates of the product-moment correlation from tails of the distributions of scale scores (Flanagan, 1939). Scale reliabilities were estimated by Kuder-Richardson formula 20.

# APPENDIX C

## Table C-1

Means, Standard Deviations, and Reliabilities
of Upperclass Press Scales

| Scale* | Mean | Standard deviation | Reliability estimate |
|---|---|---|---|
| 1. Faculty press for positive evaluations of ability | 27.3 | 5.3 | .73 |
| 2. Faculty press for high academic standards | 27.6 | 5.1 | .74 |
| 3. Faculty press for independent thinking | 25.5 | 5.9 | .84 |
| 4. Faculty enthusiasm for intellectual values | 31.7 | 5.2 | .84 |
| 5. Faculty press for advanced training | 27.2 | 5.8 | .80 |
| 6. Faculty press for convergent thinking | 26.5 | 3.1 | .09 |
| 7. Faculty adequacy as positive role models | 28.4 | 5.9 | .83 |
| 8. Excellence of faculty teaching | 28.2 | 5.5 | .84 |
| 9. Availability of faculty to students | 23.9 | 6.9 | .87 |
| 10. Faculty press for affiliation | 27.1 | 6.5 | .87 |
| 11. Faculty press for compliance | 26.6 | 5.0 | .71 |
| 12. Faculty structuring of major field of study | 30.4 | 4.1 | .67 |
| 13. Student press for intellectualism | 28.6 | 5.3 | .81 |

Table C-1--Continued

| Scale | Mean | Standard deviation | Reliability estimate |
|---|---|---|---|
| 14. Student press for unfavorable self-evaluations | 20.2 | 4.4 | .72 |
| 15. Student cohesiveness | 27.8 | 3.9 | .57 |
| 16. Student rebelliousness | 23.0 | 4.2 | .63 |
| 17. Student playfulness | 27.1 | 4.4 | .65 |
| 18. Student press for status | 19.9 | 5.6 | .74 |
| 19. Student opposition to faculty influence | 21.4 | 5.0 | .77 |
| 20. Student press for openness to experience | 30.0 | 4.6 | .72 |

*Scale norms and reliabilities are based on a 20 per cent random sample (N = 580) of all respondents to the August, 1963 survey. Scale reliabilities were estimated by Kuder-Richardson formula 20 (Ferguson, 1951).

## Table C-2

### Items and Item Statistics for College Press Scales Administered in Fall, 1963

| Scale and Items[a] | Percentage of students saying: Disagree 1 | 2 | 3 | 4 | Agree 5 | Correlation between item and scale scores[b] |
|---|---|---|---|---|---|---|
| Scale 1: Faculty press for positive evaluations of ability | | | | | | |
| 78. Their evaluations of my academic performance convinced me that I had a flair for course work in this area. (T) | 3 | 15 | 31 | 38 | 13 | .69 |
| 30. They provided personal evaluations of my ability which made me realize I had potentiality as a contributor in my field of study. (T) | 12 | 23 | 23 | 29 | 13 | .68 |
| 90. The grades they gave me suggested that I was not unusually qualified for graduate work in the field. (F) | 40 | 35 | 12 | 11 | 2 | .64 |
| 102. They gave me mostly A's and B's in my courses under them. (T) | 8 | 21 | 16 | 22 | 33 | .64 |
| 66. They rarely gave the student enough feedback on his work to really know what his strong points were. (F) | 12 | 37 | 24 | 22 | 5 | .63 |
| 114. They made little effort to give special recognition to students who did exceptional work. (F) | 22 | 43 | 19 | 14 | 3 | .58 |

Table C-2--Continued

| Scale and items | Disagree 1 | 2 | 3 | 4 | Agree 5 | Correlation |
|---|---|---|---|---|---|---|
| 54. They wrote extensive, evaluative comments on my term papers or examinations in their courses. (T) | 12 | 31 | 30 | 20 | 7 | .57 |
| 42. They were critical of my work and made little effort to spare my feelings when giving negative evaluations. (F) | 21 | 34 | 25 | 16 | 5 | .30 |
| Scale 2: Faculty press for high academic standards | | | | | | |
| 55. Typically their courses demanded excellent academic performance by all students. (T) | 4 | 15 | 31 | 36 | 14 | .75 |
| 43. It was fairly easy to pass most of their courses without working very hard. (F) | 24 | 35 | 17 | 17 | 6 | .73 |
| 115. Standards set by the faculty were not particularly hard to achieve. (F) | 15 | 41 | 23 | 19 | 2 | .70 |
| 31. They really pushed the students' capacities to the limit. (T) | 6 | 22 | 29 | 33 | 10 | .63 |
| 67. Most students were able to pass their courses just by learning what was in the textbook. (F) | 18 | 28 | 18 | 26 | 9 | .63 |
| 91. Students were often able to get through their courses by personality, pull, or bluff. (F) | 34 | 38 | 16 | 8 | 4 | .60 |

Table C-2--Continued

| Scale and items | Disagree | | | | Agree | Correlation |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | |
| 103. A grade of "A" in their courses was reserved for a truly exceptional performance. (T) | 2 | 4 | 10 | 34 | 50 | .43 |
| 79. It seemed they often tried to flunk out students who did not meet their standards. (T) | 13 | 38 | 29 | 16 | 4 | .25 |
| Scale 3: Faculty press for independent thinking | | | | | | |
| 68. They did little to help the student develop his imaginative and creative capacities. (F) | 17 | 31 | 29 | 17 | 6 | .79 |
| 44. They provided the student little or no opportunity to pursue independent study under their supervision. (F) | 17 | 32 | 26 | 20 | 6 | .71 |
| 56. They felt free to go into absolutely anything in trying to get students to develop their individual interests. (T) | 8 | 29 | 33 | 23 | 6 | .71 |
| 104. They typically adjusted assignments and projects to fit the student's unique interests. (T) | 13 | 31 | 30 | 20 | 6 | .70 |
| 32. They urged their students to undertake independent research projects. (T) | 12 | 28 | 28 | 24 | 7 | .68 |
| 92. They were too busy to hunt for ways of getting students to develop initiative. (F) | 14 | 34 | 31 | 19 | 3 | .68 |

Table C-2--Continued

| Scale and items | Disagree 1 | 2 | 3 | 4 | Agree 5 | Correlation |
|---|---|---|---|---|---|---|
| 80. In grading papers and projects their main criterion was the student's ability to display independence of judgment and originality. (T) | 5 | 20 | 32 | 32 | 11 | .62 |
| 116. Papers and projects which expressed a point of view opposed to theirs were generally graded unfavorably. (F) | 21 | 42 | 27 | 9 | 2 | .56 |
| Scale 4: Faculty enthusiasm for intellectual values | | | | | | |
| 117. They clearly conveyed to me a sense of what it means to become deeply involved in a discipline or subject. (T) | 3 | 13 | 27 | 39 | 17 | .75 |
| 69. They typically exhibited great interest in, and enthusiasm about, their field of study. (T) | 1 | 4 | 13 | 42 | 39 | .74 |
| 81. They were mostly content to follow their art or field of knowledge desultorily or superficially. (F) | 27 | 45 | 20 | 6 | 1 | .71 |
| 93. It was obvious that they had fallen in love with the search for knowledge. | 4 | 14 | 36 | 32 | 15 | .71 |
| 45. They were clearly dedicated to, and enthusiastic about, their art or field of knowledge. (T) | 1 | 3 | 12 | 37 | 47 | .68 |

TableC-2--Continued

| Scale and items | Disagree 1 | 2 | 3 | 4 | Agree 5 | Correlation |
|---|---|---|---|---|---|---|
| 33. They seemed to have little genuine enthusiasm for the intellectual life. (F) | 41 | 32 | 15 | 10 | 2 | .66 |
| 105. They did not appear to have any strong and active research interests in their field of study. (F) | 39 | 38 | 16 | 6 | 2 | .65 |
| 57. They seemed somewhat disillusioned and pessimistic about the prospects for any real progress in their field of study. (F) | 54 | 33 | 8 | 4 | 1 | .56 |
| Scale 5: Faculty press for advanced training | | | | | | |
| 46. They encouraged students to do graduate work. (T) | 4 | 9 | 28 | 33 | 27 | .77 |
| 94. They tried to persuade qualified students to seek advanced training in their field of study. (T) | 3 | 8 | 24 | 37 | 27 | .74 |
| 34. They spent little or no time counseling students about opportunities for graduate study in their field. (F) | 21 | 28 | 23 | 20 | 8 | .68 |
| 82. They showed little interest in recruiting students into their field of study. (F) | 25 | 37 | 24 | 11 | 3 | .65 |
| 70. They taught their courses as if most of their students were going into graduate study. (T) | 6 | 22 | 30 | 29 | 12 | .61 |

Table C-2--Continued

| Scale and items | Disagree 1 | 2 | 3 | 4 | Agree 5 | Correlation |
|---|---|---|---|---|---|---|
| 106. In classes they rarely discussed the educational requirements for various career specialties in their field of study. (F) | 9 | 23 | 24 | 29 | 14 | .58 |
| 58. They typically assumed that most of their students would not go on into graduate study. (F) | 32 | 28 | 25 | 12 | 3 | .58 |
| 118. In many of their courses they presented information about careers in their field of study. (T) | 12 | 28 | 26 | 24 | 10 | .56 |
| Scale 6: Faculty press for covergent thinking | | | | | | |
| 83. They typically demanded that answers to test questions be strictly to the point and answer the specific questions asked. (T) | 3 | 11 | 19 | 41 | 27 | .56 |
| 59. They typically tried to confine their teaching to what was definitely known in their field of study. (T) | 17 | 34 | 22 | 21 | 5 | .47 |
| 95. Frequently their exam questions had no single correct answer and the student was judged on the manner in which he developed his ideas. (F) | 9 | 21 | 24 | 32 | 14 | .46 |
| 71. Their courses were largely focussed upon the frontiers of knowledge and freely speculated about the unknown and untried. (F) | 6 | 27 | 39 | 21 | 7 | .43 |

Table C-2--Continued

| Scale and items | Disagree 1 | 2 | 3 | 4 | Agree 5 | Correlation |
|---|---|---|---|---|---|---|
| 119. They were more concerned with exposing the student to new and fanciful ideas than with teaching him good method and technique in their field of study. (F) | 20 | 49 | 24 | 6 | 2 | .43 |
| 47. In papers and reports they rarely insisted that students carefully document their sources of information. (F) | 48 | 31 | 13 | 7 | 1 | .25 |
| 107. They were often critical of the ideas and work of other workers in their field of study. (T) | 15 | 35 | 30 | 16 | 4 | .21 |
| 35. Their courses placed strong emphasis upon teaching the student to critically analyze and evaluate ideas and hypotheses. (T) | 3 | 11 | 23 | 42 | 21 | .10 |
| Scale 7: Faculty adequacy as positive role models | | | | | | |
| 84. On the whole I am grateful to them for showing me a way of life worthy of imitation. (T) | 6 | 15 | 30 | 34 | 16 | .83 |
| 48. By and large they were not the kind of person I'd like to be. (F) | 27 | 29 | 26 | 15 | 3 | .79 |
| 108. A few of them were the kind of person one can't help using as a model for oneself. (T) | 7 | 15 | 23 | 33 | 22 | .75 |

### Table C-2 --Continued

| Scale and items | Disagree |  |  |  | Agree | Correlation |
|---|---|---|---|---|---|---|
|  | 1 | 2 | 3 | 4 | 5 |  |
| 36. I admired most of them as persons not just as professors. (T) | 2 | 12 | 25 | 37 | 24 | .73 |
| 72. They did not make much of a difference in my life beyond the specific information they imparted. (F) | 21 | 32 | 23 | 19 | 6 | .72 |
| 96. Most of their opinions and values still seem somewhat alien and ivory-towered to me. (F) | 21 | 52 | 19 | 7 | 2 | .60 |
| 120. They were uniformly quite ordinary men with their share of pettiness, petulance, and vanity. (F) | 6 | 34 | 30 | 25 | 6 | .52 |
| 60. A few of them really captured my imagination. (T) | 5 | 9 | 15 | 36 | 35 | .46 |
| Scale 8: Excellence of faculty teaching |  |  |  |  |  |  |
| 109. Their lectures clearly revealed they had put a great deal of energy and thought into doing a good job of teaching. (T) | 3 | 12 | 26 | 45 | 14 | .78 |
| 85. They were extremely efficient and skillful in their use of class time. (T) | 3 | 12 | 37 | 39 | 9 | .76 |
| 37. In their lectures the presentation of material was extremely well planned and illustrated. (T) | 2 | 12 | 32 | 43 | 10 | .75 |

Table C-2 --Continued

| Scale and items | Disagree |  |  |  | Agree | Correlation |
|---|---|---|---|---|---|---|
|  | 1 | 2 | 3 | 4 | 5 |  |
| 73. Their lectures were occasionally somewhat rambling and unorganized. (F) | 9 | 37 | 24 | 24 | 6 | .74 |
| 121. They often seemed bored with their teaching assignments. (F) | 23 | 47 | 19 | 9 | 2 | .73 |
| 49. Occasionally it was clear that they were not adequately prepared to lecture on the day's topic. (F) | 27 | 36 | 18 | 15 | 4 | .66 |
| 97. Their lectures were routine and duplicated material in the textbook. (F) | 18 | 36 | 31 | 12 | 3 | .64 |
| 61. Their lectures stressed basic science or scholarship and really probed into the fundamentals of their subjects. (T) | 3 | 8 | 28 | 45 | 16 | .45 |
| Scale 9: Availability of faculty to students |  |  |  |  |  |  |
| 86. There was no opportunity to interact with them outside of our respective roles as "students" and "faculty." (F) | 17 | 32 | 19 | 23 | 9 | .81 |
| 62. They seemed to have little time for informal conversations with students. (F) | 25 | 37 | 18 | 14 | 6 | .78 |
| 98. They often went out of their way to be with students at teas, dinners, or informal talk sessions. (T) | 13 | 27 | 30 | 22 | 8 | .78 |

Table C-2--Continued

| Scale and items | Disagree 1 | 2 | 3 | 4 | Agree 5 | Correlation |
|---|---|---|---|---|---|---|
| 74. There were many occasions in which they interacted with me as if I were a colleague rather than a student. (T) | 17 | 26 | 28 | 21 | 8 | .71 |
| 50. They participated with students in many out-of-class activities. (T) | 17 | 28 | 28 | 22 | 5 | .70 |
| 122. They often invited groups of students to their homes. (T) | 35 | 30 | 21 | 10 | 4 | .68 |
| 110. They usually restricted their out-of-class appointments with students to only two or three hours during the week. (F) | 20 | 34 | 20 | 19 | 7 | .67 |
| 38. They were available for consultation only during scheduled office hours. (F) | 19 | 29 | 17 | 20 | 16 | .65 |
| Scale 10: Faculty press for affiliation | | | | | | |
| 99. Their counseling and guidance of me was really personal, patient, and extensive. (T) | 15 | 22 | 27 | 23 | 12 | .82 |
| 51. They took a personal interest in me and my work. (T) | 10 | 18 | 26 | 34 | 13 | .81 |
| 111. They were not unusually skillful in getting to know students as individuals. (F) | 14 | 32 | 26 | 21 | 7 | .78 |

Table C-2 --Continued

| Scale and items | Disagree |  |  |  | Agree | Correlation |
|---|---|---|---|---|---|---|
|  | 1 | 2 | 3 | 4 | 5 |  |
| 39. I never got to know them well enough to count them as personal friends. (F) | 16 | 22 | 18 | 23 | 20 | .77 |
| 75. They were typically warm and friendly in their relations with me. (T) | 3 | 10 | 25 | 43 | 19 | .75 |
| 87. They seemed to feel that teachers should maintain a certain amount of "emotional distance" from students. (F) | 11 | 33 | 26 | 25 | 6 | .69 |
| 123. They typically showed respect for the questions and opinions of students. (T) | 1 | 7 | 13 | 55 | 24 | .60 |
| 63. They were sarcastic and abrupt with students in class. (F) | 36 | 38 | 18 | 6 | 2 | .55 |
| Scale 11: Faculty press for compliance |  |  |  |  |  |  |
| 40. They waived course prerequisites so students could be admitted to their courses. (F) | 26 | 27 | 25 | 18 | 4 | .65 |
| 52. They typically demanded strict compliance with all course requirements. (T) | 2 | 13 | 26 | 38 | 21 | .65 |
| 76. They were very reluctant to approve any exceptions in the curriculum requirements for graduation. (T) | 4 | 19 | 23 | 29 | 24 | .65 |

Table C-2 --Continued

| Scale and items | Disagree | | | | Agree | Correlation |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | |
| 88. They were permissive when it came to enforcing rules and regulations regarding major field requirements. (F) | 16 | 34 | 32 | 16 | 1 | .59 |
| 64. They permitted students to deviate somewhat from the published curriculum requirements in their course work. (F) | 11 | 25 | 29 | 30 | 5 | .57 |
| 112. They often went out of their way to be tolerant of students who did not complete their assignments on time. (F) | 10 | 33 | 31 | 22 | 4 | .54 |
| 124. They discouraged students from cutting classes. (T) | 3 | 7 | 16 | 38 | 35 | .49 |
| 100. They typically gave weekly or biweekly tests in their courses. (T) | 35 | 29 | 18 | 14 | 4 | .44 |
| Scale 12: Faculty structuring of major field of study | | | | | | |
| 113. Their courses suggested to me that there was more disorder than order in their art or area of knowledge. (F) | 31 | 48 | 14 | 6 | 1 | .70 |
| 77. They placed great emphasis upon helping the student to grasp generalizations and principles from which most of what is known in the area follows. (T) | 1 | 6 | 22 | 49 | 22 | .64 |

Table C-2--Continued

| Scale and items | Disagree 1 | 2 | 3 | 4 | Agree 5 | Correlation |
|---|---|---|---|---|---|---|
| 41. Their courses convinced me that their field of study was not a very rational or systematic enterprise. (F) | 48 | 34 | 13 | 5 | 1 | .60 |
| 53. Typically they were able to formulate principles or theories in their courses which succinctly integrated the field of study. (T) | 2 | 7 | 32 | 46 | 13 | .60 |
| 65. My teachers made me realize that the state of the art or knowledge in their area was highly chaotic and disorganized. (F) | 39 | 39 | 14 | 6 | 2 | .60 |
| 125. They showed me how the scope and complexity of knowledge in my field can be summarized by a relatively small number of basic ideas. (T) | 12 | 25 | 32 | 26 | 5 | .50 |
| 89. Their courses made me realize that my field of study was not yet in a state where it is teachable even to bright students. (F) | 56 | 32 | 9 | 2 | 1 | .48 |
| 101. They were more interested in communicating the basic structure of their area of knowledge than in familiarizing the student with specific techniques and facts. (T) | 4 | 14 | 34 | 39 | 9 | .34 |

Table C-2 --Continued

| Scale and items | Disagree 1 | 2 | 3 | 4 | Agree 5 | Correlation |
|---|---|---|---|---|---|---|
| Scale 13: Student press for intellectualism | | | | | | |
| 142. We shared with each other the excitement of intellectual discoveries. (T) | 4 | 16 | 31 | 39 | 11 | .75 |
| 158. We often had long, serious intellectual discussions. (T) | 3 | 12 | 27 | 41 | 17 | .72 |
| 174. They always enjoyed exploring ideas with each other. (T) | 1 | 7 | 29 | 46 | 16 | .70 |
| 134. When they got together they never talked about art, music, or the theater. (F) | 32 | 34 | 15 | 14 | 5 | .68 |
| 126. My friends had strong intellectual commitments. (T) | 2 | 17 | 41 | 31 | 8 | .66 |
| 182. They tended to avoid students who liked to exercise their intellectual prowess. (F) | 26 | 37 | 21 | 14 | 3 | .66 |
| 150. They were not planning to do graduate study. (F) | 20 | 32 | 33 | 13 | 3 | .58 |
| 166. They did not like students who took their studies too seriously. (F) | 24 | 43 | 19 | 12 | 2 | .48 |

Table C-2 --Continued

| Scale and items | Disagree |  |  |  | Agree | Correlation |
|---|---|---|---|---|---|---|
|  | 1 | 2 | 3 | 4 | 5 |  |
| Scale 14: Student press for unfavorable self-evaluations |  |  |  |  |  |  |
| 183. My associates were more talented and better equipped to pursue their studies than I. (T) | 20 | 45 | 28 | 6 | 1 | .72 |
| 135. Most of my associates had higher grade point averages than I. (T) | 14 | 28 | 38 | 16 | 6 | .69 |
| 143. On the whole they had greater difficulty competing for grades than I. (F) | 5 | 22 | 48 | 21 | 5 | .66 |
| 127. College was easier for me than for my friends. (F) | 6 | 19 | 48 | 21 | 6 | .65 |
| 167. The extremely high calibre of my student colleagues put a lot of pressure on me. (T) | 16 | 42 | 25 | 14 | 3 | .57 |
| 175. In comparing their abilities with mine I never felt particularly handicapped. (F) | 1 | 6 | 11 | 56 | 26 | .52 |
| 151. Most of them had much better preparation for college than I. (T) | 19 | 40 | 29 | 10 | 2 | .50 |
| 159. They were generally a capable, but not an extraordinarily brilliant, group. (F) | 3 | 17 | 16 | 51 | 13 | .38 |

Table C-2 --Continued

| Scale and Items | Disagree 1 | 2 | 3 | 4 | Agree 5 | Correlation |
|---|---|---|---|---|---|---|
| Scale 15: Student cohesiveness | | | | | | |
| 176. It was easy to get a group of them together for card games, talk sessions, going to the movies, etc. (T) | 3 | 11 | 20 | 44 | 23 | .64 |
| 184. Few, if any, of them ever shared their personal problems with me. (F) | 34 | 43 | 13 | 8 | 2 | .62 |
| 128. They often spent a lot of time with me at snack bars, taverns, or in each other's rooms. (T) | 9 | 23 | 19 | 34 | 14 | .60 |
| 144. There was a great deal of borrowing and sharing among the students in my social group. (T) | 4 | 20 | 27 | 37 | 11 | .53 |
| 136. They had little or no influence upon me. (F) | 21 | 44 | 23 | 9 | 3 | .52 |
| 168. Most of them responded to each other's ideas in a pretty cool and detached way. (F) | 13 | 58 | 23 | 7 | 0 | .43 |
| 160. Most of them seemed to be especially considerate of others in the group. (T) | 1 | 6 | 23 | 51 | 19 | .34 |
| 152. They never interfered with my needs for privacy or personal autonomy. (F) | 1 | 10 | 23 | 47 | 20 | .25 |

Table C-2 --Continued

| Scale and items | Disagree 1 | 2 | 3 | 4 | Agree 5 | Correlation |
|---|---|---|---|---|---|---|
| Scale 16: Student rebelliousness | | | | | | |
| 177. They occasionally plotted some sort of escapade or rebellion. (T) | 16 | 32 | 22 | 25 | 6 | .67 |
| 137. Among these students dormitory raids, water fights, and other student pranks were unthinkable. (F) | 15 | 35 | 25 | 18 | 7 | .64 |
| 153. They typically showed a great deal of caution and self-control in their behavior. (F) | 2 | 21 | 38 | 32 | 6 | .62 |
| 145. They would often do things even though they knew they would be criticized for them. (T) | 6 | 24 | 41 | 24 | 6 | .57 |
| 129. They were often noisy and inattentive at lectures or concerts. (T) | 46 | 39 | 10 | 3 | 1 | .46 |
| 169. They rarely did things on the spur of the moment. (F) | 22 | 49 | 21 | 7 | 1 | .46 |
| 161. They expected other people to adapt to them rather than trying to adapt themselves to others. (T) | 8 | 38 | 39 | 13 | 3 | .45 |
| 185. It was usually easy to get a group decision without a lot of argument. (F) | 7 | 22 | 32 | 32 | 8 | .35 |

Table C-2--Continued

| Scale and items | Disagree | | | | Agree | Correlation |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | |
| Scale 17: Student playfulness | | | | | | |
| 178. We rarely had much time for play or recreation. (F) | 15 | 43 | 23 | 15 | 4 | .67 |
| 186. Everyone of us had a lot of fun in college. (T) | 2 | 7 | 19 | 42 | 30 | .62 |
| 146. There weren't many opportunities for us to get together in extra-curricular activities. (F) | 30 | 38 | 16 | 13 | 3 | .59 |
| 170. Our gathering places were typically active and noisy. (T) | 5 | 23 | 34 | 30 | 8 | .56 |
| 154. Their parties were always colorful and lively. (T) | 1 | 6 | 28 | 45 | 20 | .55 |
| 130. The big college events drew little enthusiasm and support from my group. (F) | 25 | 34 | 18 | 17 | 6 | .54 |
| 162. Most of us were very serious and purposeful about the way we used our free time. (F) | 6 | 28 | 36 | 26 | 4 | .46 |
| 138. Most of them were more concerned about the present than the future. (T) | 17 | 45 | 24 | 12 | 2 | .31 |

Table C-2 --Continued

| Scale and items | Disagree 1 | 2 | 3 | 4 | Agree 5 | Correlation |
|---|---|---|---|---|---|---|
| Scale 18: Student press for status | | | | | | |
| 139. Among my associates it was important socially to be in the right club or group. (T) | 32 | 37 | 17 | 12 | 1 | .70 |
| 147. They were best described as an "open" society with no membership requirements other than a desire to associate with each other. (F) | 4 | 11 | 14 | 41 | 30 | .70 |
| 171. My social group had a reputation for being very selective about the students it would accept. (T) | 24 | 41 | 19 | 10 | 6 | .70 |
| 179. We had no formal policies for recruiting new members into our social group. (F) | 13 | 8 | 7 | 26 | 47 | .70 |
| 187. They usually expected group members to confine their social activities to students who had comparable status on the campus. (T) | 29 | 41 | 18 | 11 | 2 | .62 |
| 163. Compared to other groups on campus, my social group had little or no status. (F) | 15 | 33 | 23 | 21 | 8 | .58 |
| 155. They may not have talked much about family social and financial status but they all knew who was who. (T) | 9 | 24 | 29 | 29 | 8 | .43 |

Table C-2 --Continued

| Scale and items | Disagree |  |  |  | Agree | Correlation |
|---|---|---|---|---|---|---|
|  | 1 | 2 | 3 | 4 | 5 |  |
| 131. My close personal associates in college were very dissimilar with respect to wealth, social-class membership, and religious or political affiliations. (F) | 12 | 18 | 17 | 29 | 24 | .39 |
| Scale 19: Student opposition to faculty influence |  |  |  |  |  |  |
| 156. Most of them felt their teachers had helped them to achieve greater direction, force, and clarity. (F) | 5 | 19 | 34 | 37 | 5 | .72 |
| 140. Most of my associates were grateful to the faculty for showing them a way of life worthy of imitation. (F) | 9 | 23 | 40 | 24 | 4 | .70 |
| 172. They were often caught up in the contagious enthusiasms of their teachers. (F) | 5 | 27 | 38 | 25 | 6 | .70 |
| 164. They were generally dissatisfied and disappointed with their teachers. (T) | 10 | 44 | 32 | 11 | 2 | .65 |
| 148. They had strategies for helping each other to meet the faculty's requirements with less work. (T) | 15 | 32 | 24 | 24 | 5 | .60 |
| 180. They were a closely knit group when it came to resisting faculty influence. (T) | 19 | 39 | 29 | 10 | 3 | .57 |
| 132. They often mimicked the faculty's mannerisms and ideas with wild caricatures. (T) | 21 | 32 | 26 | 16 | 5 | .56 |

Table C-2 --Continued

| Scale and items | Disagree |  |  |  | Agree | Correlation |
|---|---|---|---|---|---|---|
|  | 1 | 2 | 3 | 4 | 5 |  |
| 188. My close personal associates had nothing but contempt for students who tried to sabotage or slow down their teachers' courses. (F) | 2 | 11 | 27 | 39 | 21 | .48 |
| Scale 20: Student press for openness to experience |  |  |  |  |  |  |
| 173. They often went to concerts and art exhibits when they were available. (T) | 8 | 21 | 25 | 33 | 14 | .71 |
| 181. They tended to avoid courses which dealt with broad human values or life goals. (F) | 33 | 40 | 17 | 8 | 1 | .67 |
| 133. My close personal associates represented mainly a meat and potatoes community, with little interest in gourmets or anything unusual. (F) | 21 | 43 | 20 | 14 | 3 | .61 |
| 189. A controversial speaker always stirred up a lot of discussion among my close personal associates. (T) | 2 | 5 | 24 | 46 | 23 | .58 |
| 141. They frequently looked for variety and novelty in summer jobs and activities. (T) | 3 | 14 | 22 | 43 | 17 | .55 |
| 165. Even when given electives, my friends rarely took courses unrelated to their own specialized field of study. (F) | 24 | 45 | 15 | 14 | 2 | .55 |
| 157. They typically responded enthusiastically to a colorful and dramatic speaker. (T) | 1 | 4 | 18 | 58 | 19 | .54 |

Table C-2--Continued

| Scale and items | Disagree |  |  |  | Agree | Correlation |
|---|---|---|---|---|---|---|
|  | 1 | 2 | 3 | 4 | 5 |  |
| 149. Most of my friends didn't do much outside of going to classes and studying. (F) | 32 | 47 | 13 | 6 | 2 | .46 |

[a] Percentages shown represent percentages of a 20 per cent random sample (N = 580) of all respondents checking each category of the rating scale. Category numbers on the rating scale were interpreted as follows: 1-Strongly disagree, almost always false; 2-Mostly disagree, mostly false; 3-Neither agree or disagree, true as often as it was false; 4-Mostly agree, mostly true; 5-Strongly agree, almost always true. The scoring weights used in computing press scale scores were identical to the rating scale numbers for all items coded "T"; for all items coded "F" scoring weights assigned to rating scale numbers 1, 2, 3, 4, and 5 were 5, 4, 3, 2, and 1, respectively.

[b] Product-moment correlations between scoring weights assigned to each item response and total scale scores.

# APPENDIX D

## TABLE D-1

## CHANGES IN PLANS TO SEEK ADVANCED TRAINING BY TIME OF DECISION AND SEX

| Response in 1963 to: "When did you make your present plans to seek, or not to seek, graduate study?" (1) | N (2) | Percentage of students reporting plans to seek grad. or prof. trg. | | | Percentage of students actually enrolling in grad. or prof. school (6) |
|---|---|---|---|---|---|
| | | At the beginning of college (1959) (3) | At the end of second year of college (1961) (4) | After four years of college (1963) (5) | |
| I. Men | | | | | |
| (1) During high school or before | 236 | 92 | 94 | 97 | 84 |
| (2) First or second year in college | 216 | 76 | 89 | 93 | 74 |
| (3) Third or fourth year in college | 564 | 56 | 64 | 85 | 49 |
| No response | 21 | 33 | 48 | 62 | 10 |
| Total | 1037 | 68 | 76 | 89 | 62 |
| II. Women | | | | | |
| (1) During high school or before | 85 | 53 | 69 | 75 | 33 |
| (2) First or second year in college | 137 | 43 | 60 | 83 | 40 |
| (3) Third or four year in college | 674 | 32 | 39 | 78 | 24 |
| No response | 37 | 24 | 30 | 46 | 5 |
| Total | 933 | 35 | 45 | 78 | 27 |
| All categories (men and women) | 1970 | 52 | 61 | 84 | 45 |

## TABLE D-2

## CHANGES IN PLANS TO SEEK ADVANCED TRAINING BY APTITUDE LEVEL AND SEX

| Aptitude level | | | Percentage of students reporting plans to seek graduate or professional training | | | |
|---|---|---|---|---|---|---|
| NMSQT selection score (1958) (1) | Equivalent percentile rank relative to national norms (2) | N (3) | At the beginning of college (1959) (4) | At the end of second year of college (1961) (5) | After four years of college (1963) (6) | Percentage of students actually enrolling in grad. or prof. school (7) |
| | | | | I. Men | | |
| 88-97 | 64-74 | 118 | 52 | 61 | 80 | 44 |
| 98-107 | 75-84 | 163 | 57 | 69 | 85 | 48 |
| 108-124 | 85-94 | 358 | 64 | 74 | 90 | 62 |
| 125-170 | 95-100 | 398 | 80 | 84 | 93 | 72 |
| Total | | 1037 | 68 | 76 | 89 | 62 |
| | | | | II. Women | | |
| 88-97 | 64-74 | 132 | 24 | 34 | 76 | 16 |
| 98-107 | 75-84 | 211 | 34 | 40 | 71 | 23 |
| 108-124 | 85-94 | 357 | 30 | 44 | 79 | 28 |
| 125-170 | 95-100 | 233 | 50 | 56 | 83 | 37 |
| Total | | 933 | 35 | 45 | 78 | 27 |

## TABLE D-3

## CHANGES IN PLANS TO SEEK ADVANCED TRAINING BY SEX AND MAJOR FIELD OF STUDY

| Major field of study reported at completion of undergraduate study[a] (1) | N (2) | Percentage of students planning to enter grad. or prof. school: At the beginning of college (1959) (3) | At end of second year (1961) (4) | After four years of college (1963) (5) | Percentage of students actually entering grad. or prof. school in Fall, 1963 (6) |
|---|---|---|---|---|---|
| | | | I. Men | | |
| Biological sciences, psychology | 141 | 87 | 94 | 96 | 81 |
| Physical sciences | 366 | 65 | 75 | 92 | 62 |
| Humanities | 181 | 82 | 90 | 93 | 70 |
| Social sciences and education | 163 | 69 | 79 | 92 | 64 |
| Misc. fields | 186 | 44 | 47 | 71 | 36 |
| All fields (men) | 1037 | 68 | 76 | 89 | 62 |
| | | | II. Women | | |
| Biological sciences, psychology | 81 | 48 | 63 | 82 | 44 |
| Physical sciences | 94 | 57 | 60 | 86 | 40 |
| Humanities | 302 | 39 | 52 | 82 | 33 |
| Social sciences and education | 299 | 29 | 38 | 79 | 19 |
| Misc. fields | 157 | 18 | 24 | 60 | 10 |
| All fields (women) | 933 | 35 | 45 | 78 | 27 |

[a] Code numbers for fields of study are given in the Survey Questionnaire (Appendix E). The following codes were combined in each of the five broadly defined major fields: *biological sciences and psychology*--20, 21, 31-33, 35-37, 39-41, 3X, 70; *physical sciences*--1-5, 8-17, 0X, 55-56; *humanities*--51-54; 80-85, 8X; *social sciences and education*--50, 57, 71-76; *miscellaneous fields*--22-29; 2X, 45-46; 86-95, 97, 99, 9X, X0, and no response.

## TABLE D-4

## INTERCORRELATION MATRIX FOR SCORES OF MEN ON THE COLLEGE PRESS SCALES
(Based on 461 Men in Cross-validation sample)

| Press scales[a] | Product-moment Correlation Coefficients (decimals omitted) | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Press Scales | | | | | | | | | | | | | | | | | | |
| | 2-8 | 2-4 | 2-12 | 2-7 | 2-3 | 2-2 | 2-5 | 2-19 | 1-11 | 1-4 | 1-7 | 1-8 | 1-10 | 1-12 | 1-14 | 1-3 | 1-5 | 1-9 | 2-11 |
| **Factor 1 Scales** | | | | | | | | | | | | | | | | | | | |
| 2-8 Excellence of teaching | -- | 66 | 58 | 60 | 57 | 47 | 46 | -49 | 18 | 21 | 15 | 17 | 10 | 17 | 23 | 32 | -13 | 00 | 09 |
| 2-4 Faculty enthusiasm | | -- | 53 | 59 | 59 | 43 | 55 | -44 | 26 | 24 | 20 | 21 | 10 | 25 | 30 | 36 | -23 | -07 | -09 |
| 2-12 Structuring of major field | | | -- | 51 | 46 | 36 | 46 | -43 | 10 | 21 | 12 | 19 | 10 | 11 | 15 | 23 | -01 | 11 | 10 |
| 2-7 Adequacy as role models | | | | -- | 55 | 29 | 47 | -54 | 18 | 13 | 13 | 14 | 08 | 09 | 21 | 23 | -11 | 03 | -03 |
| 2-3 Press for independent thinking | | | | | -- | 44 | 60 | -43 | 20 | 17 | 20 | 23 | 04 | 20 | 21 | 25 | -17 | 00 | -12 |
| 2-2 Academic standards | | | | | | -- | 38 | -36 | 12 | 25 | 08 | 11 | 13 | 15 | 15 | 23 | 04 | 08 | 16 |
| 2-5 Press for advanced training | | | | | | | -- | -36 | 14 | 18 | 17 | 21 | 08 | 12 | 19 | 20 | -06 | 02 | 01 |
| 2-19 Opposition to faculty | | | | | | | | -- | 25 | -18 | -19 | -19 | -09 | -22 | -31 | -28 | 12 | -03 | -01 |
| **Factor 2 Scales** | | | | | | | | | | | | | | | | | | | |
| 1-11 Student estheticism | | | | | | | | | -- | 52 | 66 | 60 | 47 | 65 | 55 | 45 | -21 | -12 | -15 |
| 1-4 Press for achievement | | | | | | | | | | -- | 51 | 58 | 62 | 42 | 48 | 50 | 05 | 09 | -01 |
| 1-7 Press for humanism | | | | | | | | | | | -- | 65 | 42 | 47 | 49 | 45 | -01 | -06 | -04 |

TABLE D-4 --Continued

| Press Scales | 2-8 | 2-4 | 2-12 | 2-7 | 2-3 | 2-2 | 2-5 | 2-19 | 1-11 | 1-4 | 1-7 | 1-8 | 1-10 | 1-12 | 1-14 | 1-3 | 1-5 | 1-9 | 2-11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1-8 Press for independence |  |  |  |  |  |  |  |  |  |  |  | -- | 45 | 42 | 51 | 55 | -12 | 09 | -11 |
| 1-10 Student competition |  |  |  |  |  |  |  |  |  |  |  |  | -- | 30 | 37 | 33 | 19 | 16 | 08 |
| 1-12 Student reflectiveness |  |  |  |  |  |  |  |  |  |  |  |  |  | -- | 63 | 46 | -25 | -18 | -10 |
| 1-14 Student intellectualism |  |  |  |  |  |  |  |  |  |  |  |  |  |  | -- | 59 | -23 | -07 | -02 |
| 1-3 Faculty enthusiasm |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | -- | -21 | 00 | -03 |
| **Factor 3 Scales** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1-5 Press for compliance |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | -- | 44 | 43 |
| 1-9 Press for vocationalism |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | -- | 26 |
| 2-11 Press for compliance |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | -- |

TABLE D-4 --Continued

| Press Scales | | | | | | | Press Scales | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2-17 | 2-16 | 2-15 | 2-13 | 2-20 | 1-1 | 1-6 | 1-2 | 2-14 | 1-13 | 2-18 | 2-9 | 2-10 | 2-1 |
| Factor 1 Scales | | | | | | | | | | | | | | |
| 2-8 Excellence of teaching | -04 | -24 | 07 | 29 | 24 | 22 | 19 | 17 | 16 | 06 | -05 | 33 | 43 | 43 |
| 2-4 Faculty enthusiasm | -10 | -16 | 06 | 34 | 31 | 30 | 20 | 14 | 16 | 00 | -15 | 33 | 39 | 35 |
| 2-12 Structuring of major field | -03 | -20 | -01 | 24 | 21 | 21 | 24 | 19 | 04 | -06 | -15 | 30 | 37 | 36 |
| 2-7 Adequacy as role models | -05 | -27 | 11 | 30 | 24 | 26 | 25 | 11 | 13 | 01 | -16 | 50 | 62 | 53 |
| 2-3 Press for independent thinking | -09 | -14 | 12 | 36 | 33 | 26 | 23 | 18 | 12 | 04 | -09 | 57 | 63 | 53 |
| 2-2 Academic standards | -25 | -20 | 00 | 24 | 13 | 13 | 11 | 04 | 24 | -07 | -09 | 18 | 24 | 19 |
| 2-5 Press for advanced training | -11 | -17 | 09 | 28 | 23 | 31 | 28 | 15 | 04 | 05 | -08 | 52 | 56 | 49 |
| 2-19 Opposition to faculty | 25 | 48 | 01 | -55 | -43 | -24 | -23 | -15 | -18 | 03 | 27 | -30 | -42 | -36 |
| Factor 2 Scales | | | | | | | | | | | | | | |
| 1-11 Student estheticism | -03 | -06 | 04 | 33 | 31 | 37 | 39 | 22 | 24 | 11 | -10 | 11 | 09 | 04 |
| 1-4 Press for achievement | -03 | -06 | -01 | 18 | 16 | 32 | 42 | 27 | 17 | -04 | -07 | 14 | 08 | 07 |
| 1-7 Press for humanism | 00 | 00 | 02 | 21 | 20 | 38 | 48 | 29 | 13 | 18 | -02 | 06 | 06 | 09 |
| 1-8 Press for independence | 01 | -02 | -01 | 21 | 19 | 54 | 61 | 35 | 06 | 07 | -10 | 15 | 14 | 13 |
| 1-10 Student competition | 01 | -01 | 01 | 09 | 07 | 14 | 30 | 22 | 14 | 01 | 07 | 02 | 00 | -01 |

## TABLE D-4--Continued

| Press Scales | 2-17 | 2-16 | 2-15 | 2-13 | 2-20 | 1-1 | 1-6 | 1-2 | 2-14 | 1-13 | 2-18 | 2-9 | 2-10 | 2-1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1-12 Student reflectiveness | 02 | 04 | 15 | 33 | 31 | 35 | 21 | 21 | 20 | 18 | -11 | 09 | 08 | 04 |
| 1-14 Student intellectualism | 03 | -05 | 06 | 30 | 27 | 50 | 37 | 36 | 22 | 21 | -04 | 10 | 13 | 13 |
| 1-3 Faculty enthusiasm | -07 | -13 | 01 | 26 | 18 | 53 | 44 | 43 | 12 | 10 | -13 | 08 | 12 | 16 |
| Factor 3 Scales | | | | | | | | | | | | | | |
| 1-5 Press for compliance | 03 | -08 | -04 | -17 | -13 | -23 | 04 | 02 | -10 | -07 | 12 | -05 | -05 | 01 |
| 1-9 Press for vocationalism | 01 | -15 | -08 | -10 | -11 | -01 | 24 | 14 | -06 | 09 | 03 | 08 | 07 | 03 |
| 2-11 Press for compliance | 10 | -12 | -09 | -10 | -05 | -08 | 01 | 05 | -10 | 22 | 05 | -13 | -05 | 03 |

TABLE D-4--Continued

| Press Scales | Press Scales 2-17 | 2-16 | 2-15 | 2-13 | 2-20 | 1-1 | 1-6 | 1-2 | 2-14 | 1-13 | 2-18 | 2-9 | 2-10 | 2-1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Factor 4 Scales | | | | | | | | | | | | | | |
| 2-17 Student playfulness | -- | 41 | 40 | -29 | 08 | 01 | 02 | 10 | -27 | 20 | 35 | 03 | -03 | -03 |
| 2-16 Student rebelliousness | | -- | 23 | -23 | -03 | -08 | -17 | -08 | -04 | 07 | 26 | -11 | -24 | -23 |
| 2-15 Student cohesiveness | | | -- | 14 | 29 | 02 | -03 | 04 | -08 | 13 | 13 | 21 | 14 | 06 |
| Factor 5 Scales | | | | | | | | | | | | | | |
| 2-13 Student intellectualism | | | | -- | 66 | 20 | 12 | 10 | 27 | 05 | -27 | 19 | 24 | 25 |
| 2-20 Student openness to experience | | | | | -- | 19 | 11 | 15 | 11 | 14 | -07 | 24 | 24 | 22 |
| Factor 6 Scales | | | | | | | | | | | | | | |
| 1-1 Faculty affiliation | | | | | | -- | 59 | 31 | 12 | 12 | -10 | 35 | 34 | 23 |
| 1-6 Faculty supportiveness | | | | | | | -- | 39 | 07 | 11 | -08 | 28 | 28 | 25 |
| 1-2 Faculty directiveness | | | | | | | | -- | -01 | 16 | 08 | 06 | 10 | 19 |
| Factor 7 Scale | | | | | | | | | | | | | | |
| 2-14 Unfavorable self-evaluations | | | | | | | | | -- | -04 | -04 | 08 | 04 | -13 |
| Factor 8 Scale | | | | | | | | | | | | | | |
| 1-13 Student conformity | | | | | | | | | | -- | 15 | 03 | 08 | 12 |

TABLE D-4--Continued

| Press Scales | 2-17 | 2-16 | 2-15 | 2-13 | 2-20 | 1-1 | 1-6 | 1-2 | 2-14 | 1-13 | 2-18 | 2-9 | 2-10 | 2-1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Factor 9 Scale | | | | | | | | | | | | | | |
| 2-18 Student press for status | | | | | | | | | | | -- | -05 | -07 | -01 |
| Factor 10 Scales | | | | | | | | | | | | | | |
| 2-9 Availability of faculty | | | | | | | | | | | | -- | 83 | 52 |
| 2-10 Faculty affiliation | | | | | | | | | | | | | -- | 65 |
| 2-1 Evaluations of ability | | | | | | | | | | | | | | -- |

[a] Scales having their highest loading on a given factor have been clustered, and within each cluster scales are listed in order of scale loadings on the factor. Scales with a prefix of 1 are shown in Table B-1, and scales with a prefix of 2 are shown in Table C-2, in Appendices B and C, respectively.

### TABLE D-5

### INTERCORRELATION MATRIX FOR SCORES OF WOMEN ON THE COLLEGE PRESS SCALES
(Based on 423 Women in Cross-validation Sample)

Product-moment Correlation Coefficients
(decimals omitted)

| Press Scales[a] | Press Scales 2-4 | 2-8 | 2-7 | 2-3 | 2-10 | 2-12 | 2-1 | 2-9 | 2-5 | 2-2 | 2-19 | 1-4 | 1-11 | 1-10 | 1-7 | 1-12 | 1-8 | 1-14 | 1-3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Factor 1 Scales** | | | | | | | | | | | | | | | | | | | |
| 2-4 Faculty enthusiasm | -- | 76 | 69 | 66 | 54 | 66 | 50 | 47 | 58 | 62 | -50 | 27 | 21 | 08 | 17 | 18 | 25 | 27 | 37 |
| 2-8 Excellence of teaching | | -- | 70 | 66 | 56 | 68 | 51 | 45 | 49 | 57 | -52 | 24 | 21 | 08 | 15 | 17 | 23 | 26 | 37 |
| 2-7 Adequacy as role models | | | -- | 66 | 70 | 65 | 61 | 60 | 31 | 43 | -56 | 19 | 15 | 02 | 15 | 13 | 24 | 23 | 31 |
| 2-3 Press for independent thinking | | | | -- | 71 | 57 | 62 | 68 | 60 | 56 | -56 | 35 | 24 | 14 | 22 | 21 | 39 | 31 | 34 |
| 2-10 Faculty affiliation | | | | | -- | 53 | 72 | 86 | 60 | 32 | -48 | 21 | 10 | 01 | 12 | 07 | 27 | 20 | 28 |
| 2-12 Structuring of major field | | | | | | -- | 47 | 45 | 46 | 47 | -42 | 21 | 13 | 08 | 14 | 13 | 21 | 21 | 31 |
| 2-1 Evaluations of ability | | | | | | | -- | 62 | 56 | 31 | -39 | 17 | 09 | 01 | 07 | 05 | 17 | 13 | 25 |
| 2-9 Availability of faculty | | | | | | | | -- | 56 | 30 | -42 | 20 | 10 | 00 | 13 | 09 | 29 | 19 | 28 |
| 2-5 Press for advanced training | | | | | | | | | -- | 43 | -38 | 27 | 18 | 09 | 19 | 15 | 23 | 23 | 27 |
| 2-2 Academic standards | | | | | | | | | | -- | -41 | 30 | 21 | 18 | 14 | 21 | 19 | 24 | 28 |
| 2-19 Opposition to faculty | | | | | | | | | | | -- | -30 | -25 | -09 | -16 | -26 | -24 | -36 | -37 |

TABLE D-5 --Continued

| Press Scales | 2-4 | 2-8 | 2-7 | 2-3 | 2-10 | 2-12 | 2-1 | 2-9 | 2-5 | 2-2 | 2-19 | 1-4 | 1-11 | 1-10 | 1-7 | 1-12 | 1-8 | 1-14 | 1-3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Factor 2 Scales | | | | | | | | | | | | | | | | | | | |
| 1-4 Press for achievement | | | | | | | | | | | | -- | 62 | 66 | 56 | 48 | 59 | 55 | 53 |
| 1-11 Student estheticism | | | | | | | | | | | | | -- | 49 | 61 | 61 | 54 | 58 | 42 |
| 1-10 Student competition | | | | | | | | | | | | | | -- | 41 | 41 | 40 | 39 | 33 |
| 1-7 Press for humanism | | | | | | | | | | | | | | | -- | 39 | 60 | 40 | 42 |
| 1-12 Student reflectiveness | | | | | | | | | | | | | | | | -- | 40 | 54 | 39 |
| 1-8 Press for independence | | | | | | | | | | | | | | | | | -- | 48 | 52 |
| 1-14 Student intellectualism | | | | | | | | | | | | | | | | | | -- | 57 |
| 1-3 Faculty enthusiasm | | | | | | | | | | | | | | | | | | | -- |

## TABLE D-5 --Continued

| Press Scales | Press Scales | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1-5 | 1-9 | 2-17 | 2-16 | 2-15 | 2-13 | 2-20 | 1-1 | 1-6 | 2-14 | 1-13 | 1-2 | 2-18 | 2-11 |
| Factor 1 Scales | | | | | | | | | | | | | | |
| 2-4 Faculty enthusiasm | -15 | -06 | -01 | -09 | 05 | 31 | 19 | 28 | 25 | 08 | -08 | 15 | -16 | -12 |
| 2-8 Excellence of teaching | -04 | 06 | -03 | -20 | 02 | 23 | 15 | 23 | 27 | 12 | -03 | 25 | -09 | -01 |
| 2-7 Adequacy as role models | -07 | 10 | 03 | -18 | 12 | 27 | 19 | 27 | 27 | 04 | -01 | 18 | -13 | -07 |
| 2-3 Press for independent thinking | -12 | 02 | 01 | -13 | 10 | 34 | 29 | 39 | 36 | 11 | -08 | 20 | -10 | -21 |
| 2-10 Faculty affiliation | -01 | 11 | 06 | -18 | 11 | 27 | 25 | 42 | 38 | -04 | -02 | 20 | -08 | -11 |
| 2-12 Structuring of major field | -01 | 05 | 03 | -14 | 07 | 19 | 11 | 25 | 25 | 05 | -05 | 22 | -11 | 07 |
| 2-1 Evaluation of ability | -05 | 12 | 04 | -14 | 07 | 21 | 18 | 25 | 22 | -19 | -01 | 15 | -02 | -03 |
| 2-9 Availability of faculty | -07 | 07 | 07 | -08 | 18 | 24 | 24 | 44 | 35 | 02 | -02 | 17 | -10 | -22 |
| 2-5 Press for advanced training | -02 | 07 | 08 | -06 | 11 | 28 | 20 | 28 | 27 | -01 | -03 | 17 | -02 | -06 |
| 2-2 Academic standards | 01 | 05 | -09 | -09 | 01 | 25 | 14 | 17 | 20 | 19 | -08 | 12 | -09 | 07 |
| 2-19 Opposition to faculty | 04 | -02 | 16 | 42 | 01 | -55 | -41 | -28 | -26 | -24 | 07 | -18 | 23 | 12 |

TABLE D-5--Continued

| Press Scales | 1-5 | 1-9 | 2-17 | 2-16 | 2-15 | 2-13 | 2-20 | 1-1 | 1-6 | 2-14 | 1-13 | 1-2 | 2-18 | 2-11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Factor 2 Scales | | | | | | | | | | | | | | |
| 1-4 Press for achievement | 06 | 03 | -07 | -09 | 06 | 20 | 16 | 37 | 50 | 11 | -03 | 25 | -08 | -08 |
| 1-11 Student estheticism | -01 | 02 | -03 | -09 | 07 | 26 | 23 | 31 | 38 | 09 | 00 | 21 | -10 | -09 |
| 1-10 Student competition | 14 | 09 | -02 | -09 | 02 | 06 | 07 | 13 | 29 | 13 | 01 | 13 | 07 | 05 |
| 1-7 Press for humanism | 07 | 05 | -02 | 01 | 10 | 13 | 10 | 36 | 47 | 06 | 07 | 25 | -10 | -11 |
| 1-12 Student reflectiveness | -19 | -15 | -01 | -05 | 11 | 29 | 25 | 25 | 24 | 20 | 05 | 19 | -04 | -06 |
| 1-8 Press for independence | 00 | 14 | -02 | -04 | 08 | 19 | 14 | 60 | 62 | 10 | 02 | 27 | -14 | -14 |
| 1-14 Student intellectualism | -10 | 03 | 05 | 13 | 13 | 28 | 25 | 45 | 43 | 13 | 20 | 33 | -04 | -03 |
| 1-3 Faculty enthusiasm | -09 | 04 | -07 | -13 | 07 | 20 | 13 | 54 | 50 | 05 | 08 | 39 | -15 | -01 |

TABLE D-5 --Continued

| Press Scales | 1-5 | 1-9 | 2-17 | 2-16 | 2-15 | 2-13 | 2-20 | 1-1 | 1-6 | 2-14 | 1-13 | 1-2 | 2-18 | 2-11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Factor 3 Scales | | | | | | | | | | | | | | |
| 1-5 Press for compliance | -- | 42 | -01 | -19 | -04 | -06 | -06 | -11 | 04 | -12 | 13 | 10 | 08 | 38 |
| 1-9 Press for vocationalism | | -- | 12 | -19 | 05 | -03 | -09 | 04 | 22 | -12 | 16 | 12 | 10 | 24 |
| Factor 4 Scales | | | | | | | | | | | | | | |
| 2-17 Student playfulness | | | -- | 31 | 52 | -05 | 19 | -03 | 02 | -15 | 20 | 05 | 25 | 08 |
| 2-16 Student rebelliousness | | | | -- | 19 | -19 | 00 | -04 | -13 | -02 | 02 | -07 | 07 | -11 |
| 2-15 Student cohesiveness | | | | | -- | 23 | 35 | 06 | 08 | -02 | 17 | 14 | 09 | 06 |
| Factor 5 Scales | | | | | | | | | | | | | | |
| 2-13 Student intellectualism | | | | | | -- | 70 | 20 | 16 | 28 | -01 | 17 | -22 | -08 |
| 2-20 Student openness to experience | | | | | | | -- | 12 | 11 | 17 | 02 | 11 | -10 | -02 |
| Factor 6 Scales | | | | | | | | | | | | | | |
| 1-1 Faculty affiliation | | | | | | | | -- | 66 | 06 | -03 | 29 | -15 | -11 |
| 1-6 Faculty supportiveness | | | | | | | | | -- | 06 | 05 | 34 | -08 | -06 |
| Factor 7 Scale | | | | | | | | | | | | | | |
| 2-14 Unfavorable self-evaluations | | | | | | | | | | -- | -06 | 00 | -14 | -13 |

TABLE D-5--Continued

| Press Scales | 1-<br>5 | 1-<br>9 | 2-<br>17 | 2-<br>16 | 2-<br>15 | 2-<br>13 | 2-<br>20 | 1-<br>1 | 1-<br>6 | 2-<br>14 | 1-<br>13 | 1-<br>2 | 2-<br>18 | 2-<br>11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Factor 8 Scales | | | | | | | | | | | | | | |
| 1-13 Student conformity | | | | | | | | | | | -- | 25 | 14 | 08 |
| 1-2 Faculty directiveness | | | | | | | | | | | | -- | -01 | 03 |
| Factor 9 Scale | | | | | | | | | | | | | | |
| 2-18 Student press for status | | | | | | | | | | | | | -- | 19 |
| Factor 10 Scale | | | | | | | | | | | | | | |
| 2-11 Press for compliance | | | | | | | | | | | | | | -- |

[a] Scales having their highest loading on a given factor have been clustered, and within each cluster scales are listed in order of scale loadings on the factor. Scales with a prefix of 1 are shown in Table B-1 and scales with a prefix of 2 are shown in Table C-2 in Appendices B and C, respectively.

TABLE D-6

INTERCORRELATION MATRIX FOR SCORES OF MEN AND WOMEN ON THE COLLEGE PRESS SCALES
(Based on 1,772 Men and Women in Pooled Sample)

| Press Scales[a] | Product-moment Correlation Coefficients (decimals omitted) Press Scales 2-8 | 2-4 | 2-7 | 2-12 | 2-3 | 2-2 | 2-5 | 2-1 | 2-19 | 1-11 | 1-4 | 1-7 | 1-10 | 1-8 | 1-12 | 1-14 | 1-5 | 1-9 | 2-11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Factor 1 Scales** | | | | | | | | | | | | | | | | | | | |
| 2-8 Excellence of teaching | -- | 70 | 64 | 61 | 60 | 52 | 43 | 46 | -50 | 22 | 24 | 20 | 09 | 21 | 20 | 25 | -06 | -02 | 02 |
| 2-4 Faculty enthusiasm | | -- | 64 | 58 | 64 | 53 | 56 | 46 | -48 | 26 | 28 | 24 | 12 | 25 | 23 | 30 | -12 | -07 | -10 |
| 2-7 Adequacy as role models | | | -- | 54 | 61 | 38 | 48 | 58 | -54 | 19 | 18 | 20 | 06 | 20 | 14 | 23 | -05 | 03 | -05 |
| 2-12 Structuring of major field | | | | -- | 49 | 42 | 43 | 41 | -40 | 10 | 20 | 12 | 08 | 16 | 12 | 17 | 01 | 06 | 07 |
| 2-3 Press for independent thinking | | | | | -- | 51 | 59 | 58 | -50 | 25 | 29 | 24 | 10 | 33 | 22 | 28 | -11 | -03 | -16 |
| 2-2 Academic standards | | | | | | -- | 39 | 26 | -40 | 16 | 29 | 13 | 15 | 16 | 19 | 23 | 04 | 04 | 14 |
| 2-5 Press for advanced training | | | | | | | -- | 49 | -33 | 17 | 26 | 20 | 13 | 24 | 17 | 25 | -05 | 03 | -05 |
| 2-1 Evaluations of ability ability | | | | | | | | -- | -42 | 14 | 15 | 17 | 01 | 19 | 09 | 18 | 00 | 03 | -01 |
| 2-19 Opposition to faculty influence | | | | | | | | | -- | -30 | -24 | -25 | -08 | -23 | -24 | -34 | 04 | 02 | 02 |
| **Factor 2 Scales** | | | | | | | | | | | | | | | | | | | |
| 1-11 Student estheticism | | | | | | | | | | -- | 55 | 65 | 43 | 56 | 64 | 57 | -10 | -06 | -12 |
| 1-4 Press for achievement | | | | | | | | | | | -- | 51 | 60 | 62 | 46 | 50 | 04 | 07 | -05 |

## TABLE D-6--Continued

| Press Scales | 2-8 | 2-4 | 2-7 | 2-12 | 2-3 | 2-2 | 2-5 | 2-1 | 2-19 | 1-11 | 1-4 | 1-7 | 1-10 | 1-8 | 1-12 | 1-14 | 1-5 | 1-9 | 2-11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1-7 Press for humanism | | | | | | | | | | | | -- | 36 | 62 | 45 | 46 | 04 | -01 | -09 |
| 1-10 Student competition | | | | | | | | | | | | | -- | 41 | 37 | 37 | 13 | 16 | 03 |
| 1-8 Press for independence | | | | | | | | | | | | | | -- | 44 | 50 | -06 | 08 | -14 |
| 1-12 Student reflectiveness | | | | | | | | | | | | | | | -- | 59 | -22 | -17 | -08 |
| 1-14 Student intellectualism | | | | | | | | | | | | | | | | -- | -16 | -03 | -06 |
| Factor 3 Scales | | | | | | | | | | | | | | | | | | | |
| 1-5 Press for compliance | | | | | | | | | | | | | | | | | -- | 44 | 41 |
| 1-9 Press for vocationalism | | | | | | | | | | | | | | | | | | -- | 24 |
| 2-11 Press for compliance | | | | | | | | | | | | | | | | | | | -- |

### TABLE D-6-Continued

| Press Scales | 2-17 | 2-16 | 2-15 | 2-18 | 2-13 | 2-20 | 1-1 | 1-6 | 1-3 | 1-2 | 2-14 | 1-13 | 2-10 | 2-9 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Factor 1 Scales | | | | | | | | | | | | | | |
| 2-8 Excellence of teaching | 00 | -18 | 06 | -03 | 24 | 22 | 25 | 25 | 33 | 21 | 09 | 08 | 49 | 39 |
| 2-4 Faculty enthusiasm | -03 | -12 | 10 | -10 | 34 | 29 | 28 | 24 | 35 | 16 | 07 | 04 | 49 | 42 |
| 2-7 Adequacy as role models | 02 | -17 | 12 | -08 | 30 | 26 | 27 | 27 | 25 | 13 | 04 | 08 | 66 | 55 |
| 2-12 Structuring of major field | 01 | -15 | 03 | -05 | 19 | 18 | 20 | 22 | 23 | 16 | -01 | 01 | 45 | 37 |
| 2-3 Press for independent thinking | 00 | -09 | 13 | -05 | 35 | 33 | 32 | 29 | 29 | 17 | 07 | 04 | 68 | 63 |
| 2-2 Academic standards | -13 | -14 | 01 | -06 | 23 | 16 | 17 | 17 | 25 | 06 | 16 | 00 | 30 | 28 |
| 2-5 Press for advanced training | 01 | -05 | 11 | -01 | 29 | 24 | 27 | 24 | 24 | 15 | 03 | 03 | 56 | 53 |
| 2-1 Evaluation of ability | 02 | -18 | 11 | -01 | 26 | 28 | 24 | 24 | 19 | 14 | -19 | 12 | 69 | 57 |
| 2-19 Opposition to faculty influence | 17 | 43 | -01 | 20 | -56 | -46 | -24 | -25 | -30 | -16 | -12 | -05 | -45 | -35 |
| Factor 2 Scales | | | | | | | | | | | | | | |
| 1-11 Student estheticism | -02 | -09 | 07 | -10 | 32 | 32 | 34 | 40 | 43 | 22 | 12 | 14 | 14 | 13 |
| 1-4 Press for achievement | -06 | -07 | 03 | -08 | 21 | 18 | 35 | 46 | 52 | 24 | 13 | 02 | 17 | 19 |
| 1-7 Press for humanism | -03 | -07 | 05 | -06 | 23 | 23 | 39 | 49 | 45 | 27 | 05 | 20 | 14 | 12 |
| 1-10 Student competition | -02 | -04 | 01 | 04 | 09 | 06 | 13 | 29 | 30 | 18 | 18 | 07 | 03 | 04 |
| 1-8 Press for independance | -02 | -02 | 04 | -11 | 23 | 21 | 54 | 61 | 55 | 28 | 07 | 09 | 21 | 22 |

TABLE D-6--Continued

| Press Scales | Press Scales | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2-17 | 2-16 | 2-15 | 2-18 | 2-13 | 2-20 | 1-1 | 1-6 | 1-3 | 1-2 | 2-14 | 1-13 | 2-10 | 2-9 |
| 1-12 Student reflectiveness | 02 | -01 | 12 | -03 | 32 | 14 | 33 | 25 | 44 | 20 | 18 | 16 | 10 | 11 |
| 1-14 Student intellectualism | 01 | -11 | 09 | -03 | 29 | 28 | 48 | 40 | 57 | 31 | 12 | 23 | 19 | 17 |
| Factor 3 Scales | | | | | | | | | | | | | | |
| 1-5 Press for compliance | 01 | -12 | -02 | 07 | -10 | -06 | -18 | 07 | -13 | 01 | -10 | 14 | -01 | -04 |
| 1-9 Press for vocationalism | 07 | -11 | -02 | 06 | -11 | -11 | -02 | 24 | 00 | 10 | -07 | 12 | 05 | 04 |
| 2-11 Press for compliance | 06 | -14 | -02 | 10 | -10 | -04 | -07 | -01 | -03 | 00 | -08 | 16 | -07 | -13 |
| Factor 4 Scales | | | | | | | | | | | | | | |
| 2-17 Student playfulness | -- | 39 | 44 | 33 | -17 | 16 | -01 | 03 | -07 | 04 | -20 | 17 | 05 | 08 |
| 2-16 Student rebelliousness | | -- | 22 | 15 | -19 | -04 | -05 | -13 | -11 | -05 | -02 | -03 | -15 | -04 |
| 2-15 Student cohesiveness | | | -- | 10 | 21 | 35 | 05 | 03 | 01 | 04 | -06 | 14 | 14 | 18 |
| 2-18 Student press for status | | | | -- | -22 | -02 | -08 | -05 | -10 | 01 | -08 | 14 | -03 | -04 |
| Factor 5 Scales | | | | | | | | | | | | | | |
| 2-13 Student intellectualism | | | | | -- | 69 | 18 | 14 | 21 | 11 | 24 | 06 | 26 | 22 |
| 2-20 Student openness to experience | | | | | | -- | 17 | 15 | 15 | 11 | 08 | 14 | 27 | 25 |

TABLE D-6--Continued

| Press Scales | Press Scales | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2-17 | 2-16 | 2-15 | 2-18 | 2-13 | 2-20 | 1-1 | 1-6 | 1-3 | 1-2 | 2-14 | 1-13 | 2-10 | 2-9 |
| Factor 6 Scales | | | | | | | | | | | | | | |
| 1-1 Faculty affiliation | | | | | | | -- | 62 | 55 | 29 | 06 | 08 | 36 | 38 |
| 1-6 Faculty supportiveness | | | | | | | | -- | 49 | 35 | 03 | 15 | 32 | 29 |
| 1-3 Faculty enthusiasm | | | | | | | | | -- | 38 | 08 | 12 | 20 | 18 |
| 1-2 Faculty directiveness | | | | | | | | | | -- | 00 | 16 | 13 | 11 |
| Factor 7 Scale | | | | | | | | | | | | | | |
| 2-14 Unfavorable self-evaluations | | | | | | | | | | | -- | -05 | -04 | 00 |
| Factor 8 Scale | | | | | | | | | | | | | | |
| 1-13 Student conformity | | | | | | | | | | | | -- | 08 | 04 |
| Factor 10 Scales | | | | | | | | | | | | | | |
| 2-10 Faculty affiliation | | | | | | | | | | | | | -- | 84 |
| 2-9 Availability of faculty | | | | | | | | | | | | | | -- |

[a] Scales having their highest loading on a given factor have been clustered, and within each cluster scales are listed in order of scale loadings on the factor. Scales with a prefix of 1 are shown in Table B-1, and scales with a prefix of 2 are shown in Table C-2, in Appendices B and C, respectively. In this table the ninth factor is labelled Factor 10 to conform with the numbering of factors in Chapter 4.

# TABLE D-7

## ROTATED FACTOR LOADINGS FROM FACTOR ANALYSIS OF INTERCORRELATIONS OF COLLEGE PRESS SCORES FOR MEN

(Decimals omitted)

| Scale[a] | Factors 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Proportion of variance accounted for by 10 factors |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Factor 1 Scales | | | | | | | | | | | |
| 2-8 Excellence of faculty teaching | 81 | -12 | 02 | 04 | -08 | -04 | 04 | 08 | -07 | 11 | 70 |
| 2-4 Faculty enthusiasm for intellectual values | 75 | -19 | 17 | 00 | -10 | -05 | 06 | -02 | 08 | 13 | 67 |
| 2-12 Faculty structuring of major field of study | 67 | - 9 | -11 | 04 | -08 | -12 | -07 | -09 | 07 | 12 | 52 |
| 2-7 Faculty adequacy as positive role models | 61 | -08 | 05 | 10 | -15 | -07 | -04 | 00 | -01 | 40 | 58 |
| 2-3 Faculty press for independent thinking | 61 | -13 | 11 | -02 | -15 | -04 | 06 | -01 | -01 | 45 | 64 |
| 2-2 Faculty academic standards | 56 | -11 | -16 | 11 | -05 | 06 | 27 | -03 | 11 | 03 | 45 |
| 2-5 Faculty press for advanced training | 55 | -12 | -01 | 01 | -06 | -08 | 01 | 01 | 06 | 43 | 51 |
| 2-19 Student opposition to faculty influence | -49 | 14 | 00 | -35 | 46 | 09 | -01 | -02 | -06 | -18 | 63 |
| Factor 2 Scales | | | | | | | | | | | |
| 1-11 Student press for estheticism | 05 | -79 | 18 | 04 | -18 | 03 | 08 | 06 | 03 | 05 | 71 |
| 1-4 Faculty press for achievement | 17 | -74 | -16 | -02 | 00 | -07 | 09 | -18 | 03 | 01 | 65 |
| 1-7 Faculty press for humanism | 04 | -74 | 02 | 02 | -08 | -11 | -02 | 08 | -04 | 05 | 57 |
| 1-8 Faculty press for independence | 07 | -74 | 01 | 00 | -03 | -36 | -06 | -09 | 06 | 10 | 71 |
| 1-10 Student press for competition | 05 | -67 | -29 | -03 | 01 | 07 | 07 | -16 | -13 | -03 | 58 |
| 1-12 Student press for reflectiveness | 10 | -64 | 24 | -10 | -19 | 04 | 12 | 26 | 14 | -02 | 62 |

TABLE D-7--Continued

| Scale | Factors 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Proportion of variance accounted for by 10 factors |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1-14 Student press for intellectualism | 18 | -64 | 16 | 00 | -14 | -23 | 11 | 28 | 00 | -02 | 63 |
| 1-3 Faculty enthusiasm | 29 | -57 | 10 | 08 | -05 | -39 | 02 | 11 | 08 | -07 | 60 |
| Factor 3 Scales | | | | | | | | | | | |
| 1-5 Faculty press for compliance | -11 | 05 | -77 | 01 | 06 | 13 | -04 | 01 | -08 | 03 | 64 |
| 1-9 Faculty press for vocationalism | 01 | 02 | -59 | 06 | 07 | -20 | 00 | -04 | -01 | 08 | 40 |
| 2-11 Faculty press for compliance | 12 | 06 | -56 | 03 | 07 | 04 | -06 | 35 | 03 | -15 | 49 |
| Factor 4 Scales | | | | | | | | | | | |
| 2-17 Student playfulness | -06 | -01 | -05 | -68 | 06 | -10 | -24 | 15 | -19 | -01 | 60 |
| 2-16 Student rebelliousness | -22 | -01 | 16 | -60 | 16 | 06 | 06 | -01 | -05 | -11 | 48 |
| 2-15 Student cohesiveness | 05 | -01 | 05 | -53 | -25 | 04 | -04 | 06 | -02 | 14 | 38 |
| Factor 5 Scales | | | | | | | | | | | |
| 2-13 Student press for intellectualism | 24 | -19 | 10 | 16 | -75 | -01 | 16 | 02 | 14 | 10 | 75 |
| 2-20 Student press for openness to experience | 20 | -17 | 06 | -20 | -75 | -05 | 02 | 07 | 02 | 10 | 70 |
| Factor 6 Scales | | | | | | | | | | | |
| 1-1 Faculty press for affiliation | 15 | -40 | 16 | 01 | 00 | -57 | 08 | 14 | 14 | 26 | 65 |
| 1-6 Faculty supportiveness | 09 | -48 | -17 | 09 | 02 | -55 | -04 | -03 | 02 | 26 | 66 |
| 1-2 Faculty directiveness | 15 | -32 | -10 | -01 | -07 | -41 | -10 | 11 | -17 | -02 | 36 |

TABLE D-7--Continued

| Scale | Factors 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Proportion of variance accounted for by 10 factors |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Factor 7 Scale | | | | | | | | | | | |
| 2-14 Student press for unfavorable self-evaluation | 09 | -15 | 09 | 15 | -11 | 01 | 75 | -02 | -06 | -01 | 64 |
| Factor 8 Scale | | | | | | | | | | | |
| 1-13 Student press for social conformity | -04 | -11 | -11 | -14 | -08 | -08 | -03 | 62 | -10 | 06 | 46 |
| Factor 9 Scale | | | | | | | | | | | |
| 2-18 Student press for status | -08 | 04 | -07 | -32 | 15 | 00 | 05 | 11 | -67 | -03 | 60 |
| Factor 10 Scales | | | | | | | | | | | |
| 2-9 Availability of faculty to students | 27 | -04 | 01 | -12 | -07 | -09 | 09 | -04 | 05 | 83 | 81 |
| 2-10 Faculty press for affiliation | 39 | -02 | 01 | 05 | -09 | -07 | -02 | 08 | -01 | 83 | 87 |
| 2-1 Faculty evaluations of ability | 42 | -02 | -02 | 11 | -13 | -09 | -24 | 13 | -14 | 53 | 59 |
| Per cent of communality accounted for by each factor: | 20.6 | 23.1 | 8.6 | 7.7 | 8.5 | 6.6 | 4.4 | 4.3 | 3.5 | 12.7 | |

[a] Each press scale is listed under the factor on which it had its highest loading.

TABLE D-8

ROTATED FACTOR LOADINGS FROM FACTOR ANALYSIS OF INTERCORRELATIONS OF COLLEGE PRESS SCORES FOR WOMEN
(Decimals omitted)

| Scale[a] | Factors | | | | | | | | | | Proportion of variance accounted for by 10 factors |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | |
| **Factor 1 Scales** | | | | | | | | | | | |
| 2-4 Faculty enthusiasm for intellectual values | 83 | 15 | -15 | 00 | -03 | 02 | 04 | -01 | 19 | 14 | 80 |
| 2-8 Excellence of faculty teaching | 82 | 13 | -01 | -09 | 00 | 02 | 10 | 11 | 11 | 18 | 76 |
| 2-7 Faculty adequacy as positive role models | 81 | 05 | 01 | -04 | -10 | 09 | -02 | 10 | 07 | -05 | 70 |
| 2-3 Faculty press for independent thinking | 80 | 20 | -06 | 00 | -14 | 16 | 07 | -06 | 00 | -18 | 76 |
| 2-10 Faculty press for affiliation | 77 | -02 | 09 | -02 | -17 | 31 | -11 | -01 | -15 | -33 | 87 |
| 2-12 Faculty structuring of major field of study | 74 | 08 | 04 | -01 | 01 | 08 | 04 | 03 | 09 | 19 | 61 |
| 2-1 Faculty evaluations of ability | 71 | 01 | 05 | -03 | -11 | 11 | -28 | -01 | -14 | -17 | 65 |
| 2-9 Availability of faculty to students | 68 | 00 | 01 | 06 | -15 | 33 | -04 | -03 | -12 | -41 | 78 |
| 2-5 Faculty press for advanced training | 66 | 15 | 03 | 07 | -10 | 10 | -06 | -05 | -06 | -10 | 50 |
| 2-2 Faculty academic standards | 60 | 22 | 03 | -06 | -04 | -05 | 20 | -08 | 07 | 22 | 52 |
| 2-19 Student opposition to faculty influence | -53 | -16 | 02 | 35 | 47 | -10 | -12 | -08 | -07 | 01 | 69 |
| **Factor 2 Scales** | | | | | | | | | | | |
| 1-4 Faculty press for achievement | 19 | 81 | 07 | -05 | -04 | 15 | 04 | -08 | -01 | -05 | 73 |

TABLE D-8--Continued

| Scale | Factors 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Proportion of variance accounted for by 10 factors |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1-11 Student press for estheticism | 09 | 79 | -04 | -03 | -15 | 06 | -04 | 02 | 08 | -01 | 67 |
| 1-10 Student press for competition | 02 | 70 | 16 | -03 | 04 | -03 | 11 | -07 | -16 | 02 | 57 |
| 1-7 Faculty press for humanism | 08 | 67 | 09 | 08 | 02 | 19 | -01 | 05 | 22 | -13 | 57 |
| 1-12 Student press for reflectiveness | 08 | 64 | -26 | -02 | -21 | 04 | 07 | 10 | -09 | 08 | 56 |
| 1-8 Faculty press for independence | 17 | 62 | 07 | 04 | -01 | 46 | 04 | 00 | 17 | -13 | 68 |
| 1-14 Student press for intellectualism | 17 | 61 | -13 | -05 | -19 | 27 | 02 | 31 | -10 | 12 | 65 |
| 1-3 Faculty enthusiasm | 29 | 50 | -08 | -11 | -05 | 43 | -04 | 18 | 07 | 15 | 59 |
| Factor 3 Scales | | | | | | | | | | | |
| 1-5 Faculty press for compliance | -06 | 03 | 76 | -06 | 02 | -08 | -03 | 02 | 01 | 07 | 60 |
| 1-9 Faculty press for vocationalism | 06 | 01 | 57 | 00 | 05 | 12 | -05 | 14 | -06 | 01 | 37 |
| Factor 4 Scales | | | | | | | | | | | |
| 2-17 Student playfulness | 04 | -03 | 06 | 69 | -06 | 01 | -08 | 15 | -19 | 03 | 55 |
| 2-15 Student cohesiveness | 08 | 06 | 04 | 59 | -29 | 06 | -02 | 13 | -07 | 02 | 47 |
| 2-16 Student rebelliousness | -14 | -04 | -24 | 56 | 20 | -03 | 03 | -11 | 08 | -05 | 45 |
| Factor 5 Scale | | | | | | | | | | | |
| 2-13 Student press for intellectualism | 23 | 15 | -03 | -04 | -78 | 05 | 13 | 02 | 14 | 00 | 73 |
| 2-20 Student press for openness to experience | 16 | 14 | -05 | 23 | -78 | 01 | 04 | -02 | 02 | -01 | 72 |

TABLE D-8--Continued

| Scale | Factors 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Proportion of variance accounted for by 10 factors |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Factor 6 Scale |  |  |  |  |  |  |  |  |  |  |  |
| 1-1 Faculty press for affiliation | 23 | 27 | -08 | -02 | -05 | 80 | 01 | -01 | 06 | -03 | 78 |
| 1-6 Faculty supportiveness | 22 | 42 | 17 | 00 | 00 | 61 | 04 | 06 | 07 | -07 | 65 |
| Factor 7 Scale |  |  |  |  |  |  |  |  |  |  |  |
| 2-14 Student press for unfavorable self-evaluations | 02 | 10 | -12 | -09 | -18 | 01 | 82 | -01 | 05 | -04 | 74 |
| Factor 8 Scales |  |  |  |  |  |  |  |  |  |  |  |
| 1-13 Student press for social conformity | -06 | 04 | 14 | 17 | 00 | -01 | -02 | 69 | -07 | -05 | 54 |
| 1-2 Faculty directiveness | 17 | 23 | 11 | 04 | -07 | 26 | -02 | 33 | 05 | 07 | 29 |
| Factor 9 Scale |  |  |  |  |  |  |  |  |  |  |  |
| 2-18 Student press for status | -07 | -01 | 10 | 21 | 16 | -11 | -04 | 07 | -54 | 08 | 40 |
| Factor 10 Scale |  |  |  |  |  |  |  |  |  |  |  |
| 2-11 Faculty press for compliance | -05 | -07 | 42 | 03 | -02 | -02 | -08 | 00 | -21 | 53 | 52 |
| Per cent of communality accounted for by each factor: | 30.8 | 20.5 | 6.9 | 7.1 | 9.0 | 9.5 | 4.4 | 4.2 | 3.4 | 4.3 |  |

[a] Each press scale is listed under the factor on which it had its highest loading.

## TABLE D-9

## ROTATED FACTOR LOADINGS FROM FACTOR ANALYSIS OF INTERCORRELATIONS OF COLLEGE PRESS SCORES FOR 1,772 MEN AND WOMEN

(Decimals omitted)

| Scale[a] | Factors 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | Proportion of variance accounted for by 9 factors |
|---|---|---|---|---|---|---|---|---|---|---|
| Factor 1 Scales | | | | | | | | | | |
| 2-8 Excellence of faculty teaching | 83 | 11 | -01 | 04 | 05 | 13 | -02 | -10 | 03 | 73 |
| 2-4 Faculty enthusiasm for intellectual values | 81 | 16 | -12 | 02 | 13 | 11 | 03 | 05 | 08 | 73 |
| 2-7 Faculty adequacy as positive role models | 70 | 07 | -01 | 05 | 15 | 10 | -12 | -03 | 31 | 64 |
| 2-12 Faculty structuring of major field of study | 69 | 04 | 09 | 03 | 03 | 11 | -02 | -01 | 09 | 51 |
| 2-3 Faculty press for independent thinking | 68 | 16 | -10 | -01 | 16 | 12 | 04 | 08 | 41 | 71 |
| 2-2 Faculty academic standards | 62 | 13 | 12 | 09 | 05 | 04 | 31 | -04 | 02 | 52 |
| 2-5 Faculty press for advanced training | 54 | 14 | -01 | -05 | 09 | 10 | 08 | 05 | 38 | 48 |
| 2-1 Faculty evaluations of ability | 51 | 06 | 03 | 04 | 14 | 07 | -29 | -10 | 50 | 63 |
| 2-19 Student opposition to faculty influence | -49 | -15 | -01 | -35 | -47 | -12 | 04 | 13 | -14 | 67 |
| Factor 2 Scales | | | | | | | | | | |
| 1-11 Student press for estheticism | 09 | 77 | -13 | 04 | 20 | 17 | -06 | -11 | 01 | 71 |
| 1-4 Faculty press for achievement | 18 | 73 | 10 | 02 | 00 | 23 | 21 | 12 | 07 | 69 |

TABLE D-9--Continued

| Scale | Factors 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | Proportion of variance accounted for by 9 factors |
|---|---|---|---|---|---|---|---|---|---|---|
| 1-7 Faculty press for humanism | 10 | 68 | 01 | 04 | 13 | 30 | -20 | 03 | 00 | 62 |
| 1-10 Student press for competition | 04 | 65 | 22 | -04 | -07 | 02 | 26 | 01 | 02 | 55 |
| 1-8 Faculty press for independence | 11 | 63 | -01 | 01 | 07 | 49 | -04 | 19 | 10 | 70 |
| 1-12 Student press for reflectiveness | 10 | 61 | -26 | -05 | 17 | 17 | 17 | -30 | 00 | 64 |
| 1-14 Student press for intellectualism | 16 | 54 | -13 | 01 | 14 | 40 | 12 | -32 | 05 | 64 |
| Factor 3 Scales | | | | | | | | | | |
| 1-5 Faculty press for compliance | -05 | 02 | 76 | 01 | -02 | -11 | -08 | 00 | 01 | 60 |
| 1-9 Faculty press for vocationalism | -01 | 01 | 59 | -02 | -09 | 11 | -03 | 05 | 07 | 38 |
| 2-11 Faculty press for compliance | 03 | -11 | 51 | -01 | -03 | 00 | 04 | -31 | -13 | 38 |
| Factor 4 Scales | | | | | | | | | | |
| 2-17 Student playfulness | 01 | -04 | 05 | -78 | 03 | 05 | -18 | -10 | 01 | 66 |
| 2-16 Student rebelliousness | -14 | -03 | -21 | -58 | -13 | -03 | 08 | 20 | -05 | 46 |
| 2-15 Student cohesiveness | 06 | 02 | -02 | -51 | 32 | 02 | -03 | -03 | 09 | 38 |
| 2-18 Student press for status | -04 | -03 | 09 | -36 | -14 | -06 | -04 | -19 | 01 | 20 |
| Factor 5 Scales | | | | | | | | | | |
| 2-13 Student press for intellectualism | 21 | 18 | -08 | 17 | 81 | 05 | 16 | 02 | 09 | 80 |
| 2-20 Student press for openness to experience | 18 | 17 | -05 | -17 | 77 | 06 | 01 | -07 | 10 | 71 |

TABLE D-9--Continued

| Scale | Factors 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | Proportion of variance accounted for by 9 factors |
|---|---|---|---|---|---|---|---|---|---|---|
| Factor 6 Scales | | | | | | | | | | |
| 1-1 Faculty press for affiliation | 14 | 21 | -13 | 03 | 05 | 73 | 05 | -02 | 23 | 67 |
| 1-6 Faculty supportiveness | 14 | 36 | 20 | 03 | 03 | 66 | -08 | 10 | 17 | 68 |
| 1-3 Faculty enthusiasm | 25 | 41 | -08 | 09 | 02 | 58 | 10 | -12 | -02 | 60 |
| 1-2 Faculty directiveness | 13 | 20 | 07 | -03 | 03 | 37 | -05 | -10 | 00 | 22 |
| Factor 7 Scale | | | | | | | | | | |
| 2-14 Student press for unfavorable self-evaluations | 04 | 13 | -09 | 14 | 13 | 00 | 43 | 05 | -06 | 25 |
| Factor 8 Scale | | | | | | | | | | |
| 1-13 Student press for social conformity | 01 | 13 | 17 | -16 | 11 | 13 | -15 | -35 | 02 | 24 |
| Factor 10 Scales | | | | | | | | | | |
| 2-10 Faculty press for affiliation | 51 | 02 | 01 | 01 | 11 | 14 | -10 | -05 | 77 | 90 |
| 2-9 Availability of faculty to students | 41 | 03 | -03 | -07 | 10 | 16 | 02 | 06 | 76 | 79 |
| Per cent of communality accounted for by each factor: | 24.5 | 19.4 | 8.2 | 8.4 | 10.0 | 11.7 | 3.8 | 3.5 | 10.6 | |

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[a] Each press scale is listed under the factor on which it had its highest loading. In this table the ninth factor is labelled Factor 10 to conform with the numbering of factors in Chapter 4.

## TABLE D-10

## CLASSIFICATION OF FIELDS OF STUDY USED IN COVARIANCE ANALYSES

| Major field of study used in covariance analyses | Specific fields included[a] |
|---|---|
| Physical sciences | Astronomy, Chemistry, Geography, Geology, Meterology, Natural Science (55), Physical Science (0X), Physics |
| Psychology | Psychology |
| Biological sciences | Biochemistry, Biology, Botany, Entomology, Genetics, Microbiology, Pharmacology, Physiology, Zoology, Pre-dentistry (20), Pre-medicine (21), Other biological science fields (3X) |
| Humanities | Classical languages (53, 82), Humanities (8X), Modern foreign languages (52, 84), Philosophy |
| History | History (54, 83) |
| Social sciences | Anthropology, Area and regional studies, Economics, Political science, Social science (76), Sociology |
| English | English (51, 81) |
| Fine and applied arts | Fine and applied arts |
| Mathematics and statistics | Mathematics and statistics (09, 56) |
| Engineering | Aeronautical, Chemical, Civil, Electrical, Mechanical, Metallurgical, Mining, Engineering (17) |
| Education | Elementary, Specialized teaching fields (57) |
| Business and administration | Accounting, Advertising, Military Science, Public administration, Secretarial |

TABLE D-10--Continued

| Major field of study used in covariance analyses | Specific fields included |
|---|---|
| Health professions | Medical or dental technology, Nursing, Occupational therapy, Pharmacy, Physical therapy, Veterinary medicine, Other health fields (2X) |
| Miscellaneous fields | Agricultural sciences, Architecture, Forestry, Home Economics, Journalism, Law, Library science, Social work, Theology, No field specified (X0) |

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[a] Numbers in parentheses refer to code numbers for fields of study listed on pp. 8-9, Appendix E.

# APPENDIX E

# SURVEY QUESTIONNAIRE

# SURVEY OF CAREER PLANS OF COLLEGE STUDENTS

Conducted by Vanderbilt University under a Grant from the U. S. Office of Education

Name ________________ Identification No. ________
(Last Name) (First Name) (Middle Initial)

Present Home Address ________________ ________ ________
(Street Address) (City) (State)

## I. Plans For This Coming Fall

1. What will you be doing this Fall?

Circle the number which describes what you will be doing this Fall. If you expect to be doing two things simultaneously, circle both. If you are considering two alternative plans, circle only the more probable.

| | | |
|---|---|---|
| Working full time at a type of job which I expect to be my long run career field. . . . . . . . | 2 | (7) |
| Non-career military service . . . . . . . . | 3 | |
| Working full time at a civilian job which will probably not be my long run career field . . . . . . . . | 4 | |
| Housewife . . . . . . . . | 5 | |
| Undergraduate study in a program of study leading to a bachelor's degree. . . . | 6 | |
| Graduate study in arts and science field (physical science, engineering, biological science, social science, humanities, etc.). . . . . . . . | 7 | |
| Graduate study in a professional field (Law, medicine, dental science, theology). . . . . . . . | 8 | |
| Other (Circle and specify: ____________). . . | 9 | |

2. What are your long run educational plans?

Circle the number corresponding to the highest level of education you expect to complete. If you do not plan to seek any more higher education, circle the number most closely corresponding to the highest level of education you have already completed.

| | | |
|---|---|---|
| I expect to complete three years of college . . . . . . . . | 2 | (8) |
| I expect to get a bachelor's degree . . . . . . . . | 3 | |
| I expect to do one or more years of graduate study leading to a Master's degree | 4 | |
| I expect to obtain a first-professional degree (M.D., D.D.S, L.L.B., or B.D.) . | 5 | |
| I expect to obtain a Ph.D. or other equivalent academic doctorate degree. . . . | 6 | |

3. Have you at any time applied for admission to any graduate or professional school? (Circle one.)

| | | |
|---|---|---|
| No, and I do not expect to apply for admission to such a school next year (Fall, 1964) . . . . . . . . | 1 | (9) |
| No, but I do expect to apply for admission next year (academic year 1964-65). . | 2 | |
| *Yes, I applied to one school. . . . . . . . | 3 | |
| *Yes, I applied to 2 or 3 schools. . . . . . . . | 4 | |
| *Yes, I applied to 4 or more schools . . . . . . . . | 5 | |

*IF "YES": PLEASE ANSWER a AND b.

a. How many schools accepted you? (Circle one.)

None . . . . . . . . . 0 (10)

One. . . . . . . . . . 1

More than one. . . . 2

b. How many schools rejected your application? (Circle one.)

None . . . . . . . . . 0 (11)

One. . . . . . . . . . 1

More than one. . . . 2

SKIP COL. 12

4. Have you at any time applied for financial support (scholarship, fellowship, or assistantship) in order to attend a graduate or professional school? (Circle one.) (13)

No . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 0

*Yes. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 1

*IF "YES": PLEASE ANSWER a, b, c, AND d.

a. How many applications for financial support did you make? (Circle one.)

One. . . . . . . . 1 (14)

2 or 3 . . . . . . 2

4 or more. . . . . 3

b. How many sources (schools or other sources of financial support) offered you aid? (Circle one.)

None. . . . . . . . 0 (15)

One . . . . . . . . 1

More than one . . . 2

c. Which of the following do you expect to receive (or did you receive)? (Circle one or more.)

Stipend for part tuition. . . . . . . . . . . . . . . . . . . . . . 1 (16)

Stipend for full tuition. . . . . . . . . . . . . . . . . . . . . . 2

Stipend for tuition plus an amount under $1,000 . . . . . . . . . . . 3

Stipend for tuition plus $1,000 or more . . . . . . . . . . . . . . . 4

No financial support of any kind. . . . . . . . . . . . . . . . . . . 5

Don't know yet. . . . . . . . . . . . . . . . . . . . . . . . . . . . 6

d. From which of the following sources did you, or do you expect to, receive financial aid to attend graduate or professional school? (Circle one or more.)

No financial aid of any type . . . . . . . . . . 1 (17)

School I am attending . . . . . . . . . . . . . . 2

Private foundation, philanthropic organization, etc. . . . . . . . . . . . . . . . . . . . . . . . 3

U. S. Federal government:
National Defense Act . . . . . . . . . . . . . 4
National Science Foundation . . . . . . . . . 5
Public Health Service—National Institutes of Health. . . . . . . . . . . . . . . . . 6
Other. . . . . . . . . . . . . . . . . . . . . 7

State or local government (U. S.) . . . . . . . . 8

Other (Circle and specify:_________________) . 9

5. When did you make your present plans to seek, or not to seek, graduate study?

During high school or before . . . . . . . . . . . . . . . . . . . . . . . . . 1 (18)

First or second year in college. . . . . . . . . . . . . . . . . . . . . . . . 2

Third or fourth year in college. . . . . . . . . . . . . . . . . . . . . . . . 3

---

6. How many years of college undergraduate work have you completed? (Circle one.)

1 2 3 4 5 (19)

---

7. Have you received a Bachelor of Arts or Bachelor of Science degree (or its equivalent)? (Circle one.)

Yes, received it in May or June, 1963. . . . . . . . . . . . . . . . . . . . 1 (20)

Yes, received it before May or June, 1963. . . . . . . . . . . . . . . . . . 2

No, but will have fulfilled all the requirements by September, 1963. . . . . . . 3

*No, but expect to fulfill all requirements for it after September, 1963. . . . . 4

*No, do not expect to receive a bachelor's degree but do expect to receive a first-professional degree . . . . . . . . . . . . . . . . . . . . . . . . . 5

No, do not expect to receive either a bachelor's degree or a first-professional degree. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 6

---

*IF YOU CHECKED ONE OF THESE TWO CATEGORIES TO QUESTION 7, WHAT IS THE APPROXIMATE DATE YOU EXPECT TO RECEIVE YOUR DEGREE?

________________ (Kind of degree) ________________ (Probable date)

---

8. Name of undergraduate college or university you last attended:

________________ (Institution) __________ (City) __________ (State) (21-24)

---

9. Did you do all your college work at this school? (Circle one.)

Yes. . . . . . . . . . . . . . . . . . . . . . . 1 (25)

No, transferred to it after first year . . . . . 2

No, transferred to it after second year. . . . . 3

No, transferred to it after third year . . . . . 4

No, started here, attended a year or more elsewhere, then returned. . . . . . . . . . 5

---

10. Have you already completed one or more semesters (quarters) of graduate study? (26)

No. . . . . . . . . . 0

*Yes . . . . . . . . . 1

*IF "YES" AND YOU HAVE ENROLLED IN A GRADUATE PROGRAM LEADING TO A GRADUATE DEGREE (Master's, Ph.D., or similar degree), circle the semesters (quarters) of this program you have completed:

1 2 3 4 (27)

*IF "YES" AND YOU HAVE ENROLLED IN A PROFESSIONAL SCHOOL LEADING TO A FIRST-PROFESSIONAL DEGREE (M.D., D.D.S., L.L.B., B.D.), circle the number of semesters (quarters) of this program you have completed:

1 2 3 4 (28)

11. Did you participate in an Honors Program (special series of courses for undergraduates of outstanding promise or achievement) in your college? (Circle one.)

| | | |
|---|---|---|
| No | 1 | (29) |
| *Yes | 2 | |

*IF "YES," PLEASE ANSWER a AND b:

a. How many years did you participate in the Honors Program at your college? (Circle one.)

1 2 3 4 (30)

b. Describe your impressions of how your courses differed from those of students not in the Honors Program. (Check any which apply.)

In the Honors Program we had—

| | | |
|---|---|---|
| More advanced course content | 0 | (31) |
| Less lecturing by the faculty, more student discussion | 1 | |
| Increased opportunity for independent study | 2 | |
| Courses which covered more material | 3 | |
| Greater use of the tutorial method | 4 | |
| Greater use of primary sources and original documents rather than textbooks | 5 | |
| More frequent and intensive counseling by teachers in the major field | 6 | |
| Greater pressure to display originality and independence of judgment | 7 | |
| Courses about the same as those given to non-honors students | 8 | |
| Other (Circle and specify:_________________________) | X | |

12. In which of the following have you been an active participant at your undergraduate school? (Circle as many as apply.)

| | | |
|---|---|---|
| Editorial staff of campus publication | 0 | (32) |
| Musical or dramatic group | 1 | |
| Campus group concerned with national or world issues | 2 | |
| Inter-collegiate (varsity) athletics | 3 | |
| Fraternity, Sorority (or equivalent) | 4 | |
| Special interest group (e.g., Psychology Club, Religious Club, etc.) | 5 | |
| State government | 6 | |
| Other (Circle and specify:_________________________) | 7 | |
| None | 8 | |

13. Of your close friends in undergraduate school, how many are going on this coming year for graduate or professional studies? (Circle one.)

| | | |
|---|---|---|
| All or almost all | 1 | (33) |
| More than half | 2 | |
| Less than half | 3 | |
| Few or none | 4 | |
| No close friends at undergraduate school | 5 | |

14. Have you had any experience in original research (participation in collecting and analyzing raw data or conducting an experiment, not writing papers based on published sources or doing experiments from a laboratory manual) during your college studies? (Circle any which apply.)

| | | |
|---|---|---|
| No, I have never participated in original research | 0 | (34) |
| Yes, I have— | | |
| participated in research as part of a course | 1 | |
| been employed by a faculty member as a research assistant | 2 | |
| had an off-campus job (summer or during school year) working in research | 3 | |
| participated in a summer research training program sponsored by the government or private foundation | 4 | |
| conducted a research project on my own (e.g., senior thesis) | 5 | |
| other (Circle and specify: ____________) | 6 | |

15. Listed below are a number of awards and honors. Which of these have you received during college? (Circle any which apply.)

| | | |
|---|---|---|
| Dean's List | 0 | (35) |
| Phi Beta Kappa | 1 | |
| Other honor society based on academic achievement | 2 | |
| Graduation with honors (cum) (Magna) (Summa) | 3 | |
| Scholarship awarded on basis of academic ability | 4 | |
| Prize or award for scholarship or research work (e.g., "Smith prize for best biology experiment") | 5 | |
| Prize or award for literary, musical or artistic work | 6 | |
| Took one or more graduate level courses as an undergraduate | 7 | |
| Other award or honor (Circle and specify: ____________) | 8 | |
| No special honors | 9 | |

16. What is your overall (cumulative) grade point average for undergraduate work at the college you last attended?

IMPORTANT: If your school uses letter grades (A, B, C, etc.) please circle the code number which is closest to your letter grade average.
WARNING: The number which you circle probably does not correspond to the number equivalent at your school, e.g., at most schools "straight A" equals 4.0, here it equals "0".

If your school does not use a system of grades which can be converted to the usual letter grades, please check the last category.

| Letter Grade | Code Number | |
|---|---|---|
| A | 0 | (36) |
| A– | 1 | |
| B+ | 2 | |
| B | 3 | |
| B– | 4 | |
| C+ | 5 | |
| C | 6 | |
| C– or lower | 7 | |
| No equivalent | X | |

17. In your opinion do you have the grade record, aptitude test scores, and undergraduate course prerequisites necessary to get admitted to a graduate or professional school?

No . . . . . . . . . . . 1 (37)

Probably not . . . . . . . . 2

Probably yes . . . . . . . . 3

Yes. . . . . . . . . . . . 4

---

ARE YOU SURE OR FAIRLY SURE THAT YOU WILL BE ATTENDING GRADUATE OR PROFESSIONAL SCHOOL THIS YEAR? (ACADEMIC YEAR, 1963-1964)

IF YES: PUT AN "X" IN THIS BOX AND SKIP TO QUESTION 21 . . . . . . . . . . ☐ IF X SKIP TO COL.41

IF NO: ANSWER QUESTIONS 18 THROUGH 20, THEN SKIP TO QUESTION 24.

18. Since you've been in college, have you at any time considered going on for graduate study or considered an occupation which would require professional training beyond a bachelor's degree? (Circle one.)

I never thought of it. . . . . . . . . . . . . . . . . . . . . . . . 1 (38)

I thought about it, but I never considered it seriously. . . . . . . . 2

I considered it seriously, but decided against it. . . . . . . . . . . 3

I do plan to go on, but not this year. . . . . . . . . . . . . . . . . 4

---

19. To what extent did immediate financial obstacles (not doubts about the long run economic value of further study) affect your decision regarding graduate or professional school this year? (Circle one.)

Financial obstacles had nothing to do with it. . . . . . . . . . . . . 1 (39)

Financial obstacles played some part in my decision. . . . . . . . . . 2

Financial obstacles are the major reason I am not going on to further study next year. . . . . . . . . . . . . . . . . . . . . . . . 3

---

20. Which of the following best explains why you are not going to graduate or professional school this year? (Circle the one consideration most decisive in your planning.)

Lacked the motivation or desire to do graduate study immediately . . . . 1 (40)

Family responsibilities or financial obstacles made it impossible. . . . 2 SKIP TO COL. 46

Did not have the grade record and academic qualifications to get admitted . . . . . . . . . . . . . . . . . . . . . . . . . . . . 3

Had to go into military service (could not get deferred) . . . . . . . 4

Other (Circle and specify: ______________________________

______________________________). . . . . 5

---

IF YOU ARE SURE OR FAIRLY SURE THAT YOU WILL BE ATTENDING GRADUATE OR PROFESSIONAL SCHOOL THIS YEAR (FALL, 1963), ANSWER QUESTIONS 21-23.

21. Write below the name of the school that you will most probably attend this Fall.

______________________ ______________ ______________
(Name of School) (City) (State)

a. Is the above school the one you last attended as an undergraduate? (Circle one.)

Yes. . . . . . . . 4 (41)

No . . . . . . . . 5

22. If you were absolutely free to choose (ignoring finances, admissions, etc.) would you prefer to-- (Circle one.)

Go to the same school I expect to attend next year. . . . . . . . . . . . 1 (42)

*Attend a different school . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 2

*IF "ATTEND A DIFFERENT SCHOOL": Did any of the following prevent you from attending the school you would really prefer? (Circle any which apply.)

Wasn't offered any financial support. . . . . . . . . . . . . . . . . . . . 1 (43)

Was offered support, but it was too little. . . . . . . . . . . . . . . . 2

Was refused admission or didn't apply because I thought I would be refused. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 3

Other (Circle and specify: ______________________) . . 4

23. If you were absolutely free to choose (ignoring finances, admissions, etc.) would you prefer to-- (Circle one.)

Study in the same field I will be in. . . . . . . . . . . . . . . . . . . . . 1 (44)

*Study in a different field. . . . . . . . . . . . . . . . . . . . . . . . . . . . 2

*IF "STUDY IN A DIFFERENT FIELD": Did any of the following prevent you from studying in the field which you really prefer? (Circle any which apply.)

Wasn't offered any financial support. . . . . . . . . . . . . . . . . . . . 1 (45)

Was offered support, but it was too little. . . . . . . . . . . . . . . . 2

Was refused admission or didn't apply because I thought I would be refused. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 3

Other (Circle and specify: ______________________) . . 4

## III. Fields and Careers

**IMPORTANT NOTE:**

On pages 8 and 9 of this questionnaire is a list of fields of study and employment. Each one can be used to describe a field of study or a type of job. Thus, for example, in questions about fields of study, "Psychology" means college courses in psychology; in questions about careers, "Psychology" means the occupation of psychologist.

When you have chosen the field or occupation from the list which is your answer to one of the questions below, please write the two numbers or letters of that field in the double box at the end of that question. For example, if "Psychology" is now your major field, write its code number (70) in the boxes at the end of question 24 thus:

| 7 | 0 |
|---|---|

24. What was your major field of study during the last year you were enrolled as an undergraduate?

If you had a joint major, give the one with the most course credits. ☐☐ (46-47)

25. Future graduate or professional major?

If you do not plan to ever go to graduate or professional school, write "XX" in the boxes.

If you plan study in several fields, give the main one. ☐☐ (48-49)

26. Anticipated career field?

Please give what you expect to be your long-run career and ignore any school, stop-gap, or temporary military service which might precede it.

If you are a woman, use "Housewife (98)" only if you do not expect to work full time until your children are grown. ☐☐ (50-51)

## IMPORTANT

The following list of fields is to be used in answering Questions 24 through 26. Read the instructions for these questions found on page 7 before using the list.

**Business and Administration**

90 Accounting
91 Advertising, Public Relations
92 Military Service, Military Science
93 Secretarial Science (or employed as a secretary)
94 All other business and commercial fields (Business Administration, Marketing, Insurance, Finance, Industrial Relations, etc.)
95 Public Administration (or employed as government administrator if not covered by other fields)

**Agricultural and Related Fields**

45 Agricultural Sciences (including Animal Husbandry, Agronomy, Farm Management, Horticulture, Soil Science, Soil Conservation, etc.)
46 Forestry, Fish and Wild Life Management
27 Veterinary Medicine
47 Farming (Code as occupation only, not as field of study)

**Psychology**

70 Psychology (as a major field or career as a Psychologist)

**Social Sciences**

71 Anthropology, Archeology
72 Economics
73 Area and Regional Studies
74 Political Science, Government, International Relations
75 Sociology
76 Social Science, General and Other

**Humanities**

80 Fine and Applied Arts (Art, Music, Speech, Drama, etc.)
81 English, Creative Writing
82 Classical Languages and Literatures
83 History
84 Modern Foreign Languages and Literatures
85 Philosophy
8X Humanities, General and Other Fields

**Biological Sciences**

30 Anatomy
31 Biology
32 Biochemistry
33 Botany and Related Plant Sciences (Plant Pathology, Plant Physiology, etc.)
34 Biophysics
35 Entomology
36 Genetics
37 Microbiology (including Bacteriology, Mycology, Parasitology, Virology, etc.)
38 Pathology
39 Pharmacology
40 Physiology
41 Zoology
3X Other Biological Science Fields

**Engineering**

10 Aeronautical
11 Civil (including Agricultural, Architectural, Civil, Sanitary)
12 Chemical (including Ceramic)
13 Electrical
14 Mechanical (including Naval Architecture and Marine, Welding, Textile)
15 Metallurgical
16 Mining (including Mining, Geological, Geophysical, Petroleum)
17 Engineering, General and other specialties

**Physical Science** (NOTE: Secondary School Science Teaching is classified under Education)

01 Astronomy, Astrophysics
02 Chemistry (excluding Biochemistry which is 32)
03 Physics(excluding Biophysics which is 34)
04 Geography
05 Geology, Geophysics
06 Oceanography
07 Metallurgy
08 Meteorology (Atmospheric sciences)
0X Physical Science, General and other specialties

09 **Mathematics and Statistics** (NOTE: Secondary School Mathematics Teaching is classified under Education)

**Education** (NOTE: Junior College, College and University Teaching should be coded by Field of Specialization, not as Education)

50 Elementary (including Kindergarten and Nursery School)
Secondary--Academic Subject Fields
51 English
52 Modern Foreign Languages
53 Latin, Greek
54 History, Social Studies
55 Natural Science (General, Physics, Chemistry, Biology, etc.)
56 Mathematics
57 Specialized Teaching Fields (Physical Education, etc.)

**Health Professions**

20 Dentistry or Pre-Dentistry
21 Medicine or Pre-Medicine
22 Nursing
23 Optometry
24 Pharmacy
25 Physical Therapy
26 Occupational Therapy
27 Veterinary Medicine or Pre-Veterinary
28 Medical Technology or Dental Hygiene
2X Other Health Fields

Other Fields and Occupations

86 Architecture, City Planning
96 Foreign Service (Code as occupation only not field of study)
97 Home Economics (Code either as a field of study or as an occupation if you mean working as a home economist for pay)
98 Housewife (Code as occupation only, not as field of study)
99 Journalism, Radio-Television, Communications
9X Law, Pre-Law
87 Library Science, Archival Science
88 Social Work, Group Work
89 Theology, Religion (Employment as a Clergyman or religious worker)

X0 Field of Study or Job Which has no Near Equivalent in This List (If you use this code, please describe your field in a word or two under the questions where it applied.)

X1 Do not expect to be either employed full time or to be a Housewife (Code only for questions about careers, not for field of study.)

## IV. Descriptions of Your Undergraduate Environment

NOTE: The purpose of this section is to obtain information about your undergraduate environment so that we may relate characteristics of college subcultures to decisions to seek or not to seek advanced training. You are asked to be a reporter about those parts of your college you have known best. You have lived in a particular college environment, participated in its activities, seen its features, and sensed its expectations and demands. What kind of place was it?

INSTRUCTIONS FOR PART A: Statements in PART A are about faculty members in your undergraduate, major field of study--their courses and teaching methods, their values and emphases, and their formal and informal interactions with you. The ratings you make here may or may not correspond to the ratings you would make of faculty members in other parts of the college or university.

We do not want you to describe all faculty members in your major department. Think only of the teachers in your major field with whom you have had most of your courses. We want you to describe their behavior and the effects of their behavior upon you.

27. Using the same code numbers for the list of "Fields and Careers" you used in Questions 24 through 26, indicate the major field of the teachers you will be describing: ☐☐ (52-53)

INSTRUCTIONS FOR PART B: Statements in PART B are about your undergraduate colleagues. Your answers to this part should tell us what was generally characteristic of the undergraduate students you knew best, identified with, or associated with most commonly. The ratings you make for your personal associates in your undergraduate school may or may not correspond to the way you would rate undergraduate students in general or other groups of students at your college.

Describe only those students you knew best and associated with most commonly. They may, or may not, be students in your major field, living quarters or campus clubs.

28. Where did you meet the undergraduate colleagues you will be describing? (Circle any which apply.)

Dormitory or rooming house. . . . . . . . . . 1 (54)
My Fraternity or Sorority (or equivalent) . . 2
Campus activities . . . . . . . . . . . . . . 3
Class in my major field of study. . . . . . . 4
Other (Circle and specify: ____________ ) . . 5

29. Does this group include both men and women?

Yes . . . . . . . . . . . . . . 1 (55)
No. . . . . . . . . . . . . . . 2

DIRECTIONS: Please rate your teachers and student colleagues according to the degree to which each of the following statements describes their behavior, or the effects of their behavior upon you. The numbers in the rating scale should be interpreted as follows:

1 -- Strongly disagree; highly uncharacteristic and almost always false as a description of them.

2 -- Mostly disagree; mostly false as a description of them.

3 -- Neither agree nor disagree; true about as often as it was false as a description of them.

4 -- Mostly agree; mostly true as a description of them.

5 -- Strongly agree; highly characteristic and almost always true as a description of them.

CIRCLE THE NUMBER WHICH CORRESPONDS TO YOUR RATING FOR EACH DESCRIPTION.

How the rating scale is to be used can be illustrated with the following statement:

"The faculty participated with students in many out-of-class activities."

If you should "mostly agree" that this statement characterizes your teachers in the department or field of study indicated above, you would mark as follows:

| | Disagree | | | Agree | |
|---|---|---|---|---|---|
| The faculty participated with students in many out-of-class activities. | 1 | 2 | 3 | [✓ 4] | 5 |

PLEASE ANSWER EVERY ITEM IN PARTS A AND B.

## PART A -- FACULTY IN MAJOR FIELD

CIRCLE THE NUMBER CORRESPONDING TO YOUR RATING:

| | | Disagree | | | Agree | | |
|---|---|---|---|---|---|---|---|
| 30. | They provided personal evaluations of my ability which made me realize I had potentiality as a contributor in my field of study. | 1 | 2 | 3 | 4 | 5 | (56) |
| 31. | They really pushed the students' capacities to the limit. | 1 | 2 | 3 | 4 | 5 | (57) |
| 32. | They urged their students to undertake independent research projects. | 1 | 2 | 3 | 4 | 5 | (58) |
| 33. | They seemed to have little genuine enthusiasm for the intellectual life. | 1 | 2 | 3 | 4 | 5 | (59) |
| 34. | They spent little or no time counseling students about opportunities for graduate study in their field. | 1 | 2 | 3 | 4 | 5 | (60) |
| 35. | Their courses placed strong emphasis upon teaching the student to critically analyze and evaluate ideas and hypotheses. | 1 | 2 | 3 | 4 | 5 | (61) |
| 36. | I admired most of them as persons not just as professors. | 1 | 2 | 3 | 4 | 5 | (62) |
| 37. | In their lectures the presentation of material was extremely well planned and illustrated. | 1 | 2 | 3 | 4 | 5 | (63) |
| 38. | They were available for consultation only during scheduled office hours. | 1 | 2 | 3 | 4 | 5 | (64) |
| 39. | I never got to know them well enough to count them as personal friends. | 1 | 2 | 3 | 4 | 5 | (65) |
| 40. | They waived course prerequisites so students could be admitted to their courses. | 1 | 2 | 3 | 4 | 5 | (66) |
| 41. | Their courses convinced me that their field of study was not a very rational or systematic enterprise. | 1 | 2 | 3 | 4 | 5 | (67) |
| 42. | They were critical of my work and made little effort to spare my feelings when giving negative evaluations. | 1 | 2 | 3 | 4 | 5 | (68) |

| No. | Statement | Disagree |  |  | Agree |  |  |
|---|---|---|---|---|---|---|---|
| 43. | It was fairly easy to pass most of their courses without working very hard. | 1 | 2 | 3 | 4 | 5 | (69) |
| 44. | They provided the student little or no opportunity to pursue independent study under their supervision. | 1 | 2 | 3 | 4 | 5 | (70) |
| 45. | They were clearly dedicated to, and enthusiastic about, their art or field of knowledge. | 1 | 2 | 3 | 4 | 5 | (71) |
| 46. | They encouraged students to do graduate work. | 1 | 2 | 3 | 4 | 5 | (72) |
| 47. | In papers and reports they rarely insisted that students carefully document their sources of information. | 1 | 2 | 3 | 4 | 5 | (73) |
| 48. | By and large they were not the kind of person I'd like to be. | 1 | 2 | 3 | 4 | 5 | (74) |
| 49. | Occasionally it was clear that they were not adequately prepared to lecture on the day's topic. | 1 | 2 | 3 | 4 | 5 | (75) |
| 50. | They participated with students in many out-of-class activities. | 1 | 2 | 3 | 4 | 5 | (76) |
| 51. | They took a personal interest in me and my work. | 1 | 2 | 3 | 4 | 5 | (77) |
| 52. | They typically demanded strict compliance with all course requirements. | 1 | 2 | 3 | 4 | 5 | (78) |
| 53. | Typically they were able to formulate principles or theories in their courses which succinctly integrated the field of study. | 1 | 2 | 3 | 4 | 5 | (79) |
| 54. | They wrote extensive, evaluative comments on my term papers or examinations in their courses. | 1 | 2 | 3 | 4 | 5 | (80) |
| 55. | Typically their courses demanded excellent academic performance by all students. | 1 | 2 | 3 | 4 | 5 | (7) |
| 56. | They felt free to go into absolutely anything in trying to get students to develop their individual interests. | 1 | 2 | 3 | 4 | 5 | (8) |
| 57. | They seemed somewhat disillusioned and pessimistic about the prospects for any real progress in their field of study. | 1 | 2 | 3 | 4 | 5 | (9) |
| 58. | They typically assumed that most of their students would not go on into graduate study. | 1 | 2 | 3 | 4 | 5 | (10) |
| 59. | They typically tried to confine their teaching to what was definitely known in their field of study. | 1 | 2 | 3 | 4 | 5 | (11) |
| 60. | A few of them really captured my imagination. | 1 | 2 | 3 | 4 | 5 | (12) |
| 61. | Their lectures stressed basic science or scholarship and really probed into the fundamentals of their subjects. | 1 | 2 | 3 | 4 | 5 | (13) |
| 62. | They seemed to have little time for informal conversations with students. | 1 | 2 | 3 | 4 | 5 | (14) |
| 63. | They were sarcastic and abrupt with students in class. | 1 | 2 | 3 | 4 | 5 | (15) |
| 64. | They permitted students to deviate somewhat from the published curriculum requirements in their course work. | 1 | 2 | 3 | 4 | 5 | (16) |
| 65. | My teachers made me realize that the state of the art or knowledge in their area was highly chaotic and disorganized. | 1 | 2 | 3 | 4 | 5 | (17) |
| 66. | They rarely gave the student enough feedback on his work to really know what his strong points were. | 1 | 2 | 3 | 4 | 5 | (18) |
| 67. | Most students were able to pass their courses just by learning what was in the textbook. | 1 | 2 | 3 | 4 | 5 | (19) |
| 68. | They did little to help the student develop his imaginative and creative capacities. | 1 | 2 | 3 | 4 | 5 | (20) |
| 69. | They typically exhibited great interest in, and enthusiasm about, their field of study. | 1 | 2 | 3 | 4 | 5 | (21) |

| | | Disagree | | | Agree | | |
|---|---|---|---|---|---|---|---|
| 70. | They taught their courses as if most of their students were going into graduate study. | 1 | 2 | 3 | 4 | 5 | (22) |
| 71. | Their courses were largely focussed upon the frontiers of knowledge and freely speculated about the unknown and untried. | 1 | 2 | 3 | 4 | 5 | (23) |
| 72. | They did not make much of a difference in my life beyond the specific information they imparted. | 1 | 2 | 3 | 4 | 5 | (24) |
| 73. | Their lectures were occasionally somewhat rambling and unorganized. | 1 | 2 | 3 | 4 | 5 | (25) |
| 74. | There were many occasions in which they interacted with me as if I were a colleague rather than a student. | 1 | 2 | 3 | 4 | 5 | (26) |
| 75. | They were typically warm and friendly in their relations with me. | 1 | 2 | 3 | 4 | 5 | (27) |
| 76. | They were very reluctant to approve any exceptions in their curriculum requirements for graduation. | 1 | 2 | 3 | 4 | 5 | (28) |
| 77. | They placed great emphasis upon helping the student to grasp generalizations and principles from which most of what is known in the area follows. | 1 | 2 | 3 | 4 | 5 | (29) |
| 78. | Their evaluations of my academic performance convinced me that I had a flair for course work in this area. | 1 | 2 | 3 | 4 | 5 | (30) |
| 79. | It seemed they often tried to flunk out students who did not meet their standards. | 1 | 2 | 3 | 4 | 5 | (31) |
| 80. | In grading papers and projects their main criterion was the student's ability to display independence of judgment and originality. | 1 | 2 | 3 | 4 | 5 | (32) |
| 81. | They were mostly content to follow their art or field of knowledge desultorily or superficially. | 1 | 2 | 3 | 4 | 5 | (33) |
| 82. | They showed little interest in recruiting students into their field of study. | 1 | 2 | 3 | 4 | 5 | (34) |
| 83. | They typically demanded that answers to test questions be strictly to the point and answer the specific questions asked. | 1 | 2 | 3 | 4 | 5 | (35) |
| 84. | On the whole I am grateful to them for showing me a way of life worthy of imitation. | 1 | 2 | 3 | 4 | 5 | (36) |
| 85. | They were extremely efficient and skillful in their use of class time. | 1 | 2 | 3 | 4 | 5 | (37) |
| 86. | There was no opportunity to interact with them outside of our respective roles as "students" and "faculty." | 1 | 2 | 3 | 4 | 5 | (38) |
| 87. | They seemed to feel that teachers should maintain a certain amount of "emotional distance" from students. | 1 | 2 | 3 | 4 | 5 | (39) |
| 88. | They were permissive when it came to enforcing rules and regulations regarding major field requirements. | 1 | 2 | 3 | 4 | 5 | (40) |
| 89. | Their courses made me realize that my field of study was not yet in a state where it is teachable even to bright students. | 1 | 2 | 3 | 4 | 5 | (41) |
| 90. | The grades they gave me suggested that I was not qualified for graduate work in the field. | 1 | 2 | 3 | 4 | 5 | (42) |
| 91. | Students were often able to get through their courses by personality, pull, or bluff. | 1 | 2 | 3 | 4 | 5 | (43) |
| 92. | They were too busy to hunt for ways of getting students to develop initiative. | 1 | 2 | 3 | 4 | 5 | (44) |
| 93. | It was obvious that they had fallen in love with the search for knowledge. | 1 | 2 | 3 | 4 | 5 | (45) |
| 94. | They tried to persuade qualified students to seek advanced training in their field of study. | 1 | 2 | 3 | 4 | 5 | (46) |

Disagree Agree

95. Frequently their exam questions had no single correct answer and the student was judged on the manner in which he developed his ideas. 1 2 3 4 5 (47)

96. Most of their opinions and values still seem somewhat alien and ivory-towered to me. 1 2 3 4 5 (48)

97. Their lectures were routine and duplicated material in the textbook. 1 2 3 4 5 (49)

98. They often went out of their way to be with students at teas, dinners, or informal talk sessions. 1 2 3 4 5 (50)

99. Their counseling and guidance of me was really personal, patient, and extensive. 1 2 3 4 5 (51)

100. They typically gave weekly or biweekly tests in their courses. 1 2 3 4 5 (52)

101. They were more interested in communicating the basic structure of their area of knowledge than in familiarizing the student with specific techniques and facts. 1 2 3 4 5 (53)

102. They gave me mostly A's and B's in my courses under them. 1 2 3 4 5 (54)

103. A grade of "A" in their courses was reserved for a truly exceptional performance. 1 2 3 4 5 (55)

104. They typically adjusted assignments and projects to fit the student's unique interests. 1 2 3 4 5 (56)

105. They did not appear to have any strong and active research interests in their field of study. 1 2 3 4 5 (57)

106. In classes they rarely discussed the educational requirements for various career specialities in their field of study. 1 2 3 4 5 (58)

107. They were often critical of the ideas and work of other workers in their field of study. 1 2 3 4 5 (59)

108. A few of them were the kind of person one can't help using as a model for oneself. 1 2 3 4 5 (60)

109. Their lectures clearly revealed they had put a great deal of energy and thought into doing a good job of teaching. 1 2 3 4 5 (61)

110. They usually restricted their out-of-class appointments with students to only two or three hours during the week. 1 2 3 4 5 (62)

111. They were not skillful in getting to know students as individuals. 1 2 3 4 5 (63)

112. They often went out of their way to be tolerant of students who did not complete their assignments on time. 1 2 3 4 5 (64)

113. Their courses suggested to me that there was more disorder than order in their art or area of knowledge. 1 2 3 4 5 (65)

114. They made little effort to give special recognition to students who did exceptional work. 1 2 3 4 5 (66)

115. Standards set by the faculty were not particularly hard to achieve. 1 2 3 4 5 (67)

116. Papers and projects which expressed a point of view opposed to theirs were generally graded unfavorably. 1 2 3 4 5 (68)

117. They clearly conveyed to me a sense of what it means to become deeply involved in a discipline or subject. 1 2 3 4 5 (69)

118. In many of their courses they presented information about careers in their field of study. 1 2 3 4 5 (70)

| | | Disagree | | | Agree | | |
|---|---|---|---|---|---|---|---|
| 119. | They were more concerned with exposing the student to new and fanciful ideas than with teaching him good method and technique in his field of study. | 1 | 2 | 3 | 4 | 5 | (71) |
| 120. | They were uniformly quite ordinary men with their share of pettiness, petulance, and vanity. | 1 | 2 | 3 | 4 | 5 | (72) |
| 121. | They often seemed bored with their teaching assignments. | 1 | 2 | 3 | 4 | 5 | (73) |
| 122. | They often invited groups of students to their homes. | 1 | 2 | 3 | 4 | 5 | (74) |
| 123. | They typically showed respect for the questions and opinions of students. | 1 | 2 | 3 | 4 | 5 | (75) |
| 124. | They discouraged students from cutting classes. | 1 | 2 | 3 | 4 | 5 | (76) |
| 125. | They showed me how the scope and complexity of knowledge in my field can be summarized by a relatively small number of basic ideas. | 1 | 2 | 3 | 4 | 5 | (77) |

## PART B -- STUDENT COLLEAGUES

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 126. | My friends had strong intellectual commitments. | 1 | 2 | 3 | 4 | 5 | (7) |
| 127. | College was easier for me than for my friends. | 1 | 2 | 3 | 4 | 5 | (8) |
| 128. | They often spent a lot of time with me at snack bars, taverns, or in each other's rooms. | 1 | 2 | 3 | 4 | 5 | (9) |
| 129. | They were often noisy and inattentive at lectures or concerts. | 1 | 2 | 3 | 4 | 5 | (10) |
| 130. | The big college events drew little enthusiasm and support from my group. | 1 | 2 | 3 | 4 | 5 | (11) |
| 131. | My personal associates in college were very dissimilar with respect to wealth, social-class membership, and religious or political affiliations. | 1 | 2 | 3 | 4 | 5 | (12) |
| 132. | They often mimicked the faculty's mannerisms and ideas with wild caricatures. | 1 | 2 | 3 | 4 | 5 | (13) |
| 133. | My personal associates represented mainly a meat and potatoes community, with little interest in gourmets or anything unusual. | 1 | 2 | 3 | 4 | 5 | (14) |
| 134. | When they got together they never talked about art, music, or the theater. | 1 | 2 | 3 | 4 | 5 | (15) |
| 135. | Most of my associates had higher grade point averages than I. | 1 | 2 | 3 | 4 | 5 | (16) |
| 136. | They had little or no influence upon me. | 1 | 2 | 3 | 4 | 5 | (17) |
| 137. | Among these students dormitory raids, water fights, and other student pranks were unthinkable. | 1 | 2 | 3 | 4 | 5 | (18) |
| 138. | Most of them were more concerned about the present than the future. | 1 | 2 | 3 | 4 | 5 | (19) |
| 139. | Among my associates it was important socially to be in the right club or group. | 1 | 2 | 3 | 4 | 5 | (20) |
| 140. | Most of my associates were grateful to the faculty for showing them a way of life worthy of imitation. | 1 | 2 | 3 | 4 | 5 | (21) |
| 141. | They frequently looked for variety and novelty in summer jobs and activities. | 1 | 2 | 3 | 4 | 5 | (22) |
| 142. | We shared with each other the excitement of intellectual discoveries. | 1 | 2 | 3 | 4 | 5 | (23) |

Disagree Agree

143. On the whole they had greater difficulty competing for grades than I. 1 2 3 4 5 (24)

144. There was a great deal of borrowing and sharing among the students in my social group. 1 2 3 4 5 (25)

145. They would often do things even though they knew they would be criticized for them. 1 2 3 4 5 (26)

146. There weren't many opportunities for us to get together in extra-curricular activities. 1 2 3 4 5 (27)

147. They were best described as an "open" society with no membership requirements other than a desire to associate with each other. 1 2 3 4 5 (28)

148. They had strategies for helping each other to meet the faculty's requirements with less work. 1 2 3 4 5 (29)

149. Most of my friends didn't do much outside of going to classes and studying. 1 2 3 4 5 (30)

150. They were not planning to do graduate study. 1 2 3 4 5 (31)

151. Most of them had much better preparation for college than I. 1 2 3 4 5 (32)

152. They never interfered with my needs for privacy or personal autonomy. 1 2 3 4 5 (33)

153. They typically showed a great deal of caution and self-control in their behavior. 1 2 3 4 5 (34)

154. Their parties were always colorful and lively. 1 2 3 4 5 (35)

155. They may not have talked much about family social and financial status but they all knew who was who. 1 2 3 4 5 (36)

156. Most of them felt their teachers had helped them to achieve greater direction, force, and clarity. 1 2 3 4 5 (37)

157. They typically responded enthusiastically to a colorful and dramatic speaker. 1 2 3 4 5 (38)

158. We often had long, serious intellectual discussions. 1 2 3 4 5 (39)

159. They were generally a capable, but not an extraordinarily brilliant, group. 1 2 3 4 5 (40)

160. Most of them seemed to be especially considerate of others in the group. 1 2 3 4 5 (41)

161. They expected other people to adapt to them rather than trying to adapt themselves to others. 1 2 3 4 5 (42)

162. Most of us were very serious and purposeful about the way we used our free time. 1 2 3 4 5 (43)

163. Compared to other groups on campus, my social group had little or no status. 1 2 3 4 5 (44)

164. They were generally dissatisfied and disappointed with their teachers. 1 2 3 4 5 (45)

165. Even when given electives, my friends rarely took courses unrelated to their own specialized field of study. 1 2 3 4 5 (46)

166. They did not like students who took their studies too seriously. 1 2 3 4 5 (47)

167. The extremely high calibre of my student colleagues put a lot of pressure on me. 1 2 3 4 5 (48)

| | | Disagree | | | Agree | | |
|---|---|---|---|---|---|---|---|
| 168. | Most of them responded to each other's ideas in a pretty cool and detached way. | 1 | 2 | 3 | 4 | 5 | (49) |
| 169. | They rarely did things on the spur of the moment. | 1 | 2 | 3 | 4 | 5 | (50) |
| 170. | Our gathering places were typically active and noisy. | 1 | 2 | 3 | 4 | 5 | (51) |
| 171. | My social group had a reputation for being very selective about the students it would accept. | 1 | 2 | 3 | 4 | 5 | (52) |
| 172. | They were often caught up in the contagious enthusiasms of their teachers. | 1 | 2 | 3 | 4 | 5 | (53) |
| 173. | They often went to concerts and art exhibits when they were available. | 1 | 2 | 3 | 4 | 5 | (54) |
| 174. | They always enjoyed exploring ideas with each other. | 1 | 2 | 3 | 4 | 5 | (55) |
| 175. | In comparing their abilities with mine I never felt particularly handicapped. | 1 | 2 | 3 | 4 | 5 | (56) |
| 176. | It was easy to get a group of them together for card games, talk sessions,going to the movies, etc. | 1 | 2 | 3 | 4 | 5 | (57) |
| 177. | They occasionally plotted some sort of escapade or rebellion. | 1 | 2 | 3 | 4 | 5 | (58) |
| 178. | We rarely had much time for play or recreation. | 1 | 2 | 3 | 4 | 5 | (59) |
| 179. | We had no formal policies for recruiting new members into our social group. | 1 | 2 | 3 | 4 | 5 | (60) |
| 180. | They were a closely knit group when it came to resisting faculty influence. | 1 | 2 | 3 | 4 | 5 | (61) |
| 181. | They tended to avoid courses which dealt with broad human values or life goals. | 1 | 2 | 3 | 4 | 5 | (62) |
| 182. | They tended to avoid students who liked to exercise their intellectual prowess. | 1 | 2 | 3 | 4 | 5 | (63) |
| 183. | My associates were more talented and better equipped to pursue their studies than I. | 1 | 2 | 3 | 4 | 5 | (64) |
| 184. | Few, if any, of them ever shared their personal problems with me. | 1 | 2 | 3 | 4 | 5 | (65) |
| 185. | It was usually easy to get a group decision without a lot of argument. | 1 | 2 | 3 | 4 | 5 | (66) |
| 186. | Everyone of us had a lot of fun in college. | 1 | 2 | 3 | 4 | 5 | (67) |
| 187. | They usually expected group members to confine their social activities to students who had comparable status on the campus. | 1 | 2 | 3 | 4 | 5 | (68) |
| 188. | My close personal associates had nothing but contempt for students who tried to sabotage or slow down their teachers' courses. | 1 | 2 | 3 | 4 | 5 | (69) |
| 189. | A controversial speaker always stirred up a lot of discussion among my personal associates. | 1 | 2 | 3 | 4 | 5 | (70) |

## IMPORTANT

You have now completed the questionnaire. Please fold it and return it in the enclosed, stamped envelope to Project D, Department of Psychology, Vanderbilt University, Nashville, Tenn. 37203. Your replies to this questionnaire are completely confidential, and absolutely no information of any kind about specific persons will be released to your school or anyone else. Your questionnaire will be read only by the research staff working on this project.

190. Do you wish to receive information about where you may find a report of the results of this project?
No. . . . . . . . 0 (91)
*Yes . . . . . . . 1

*IF "YES" MAKE SURE THE ADDRESS YOU GIVE ON THE FIRST PAGE OF THIS QUESTIONNAIRE IS ONE AT WHICH YOU CAN RECEIVE MAIL ONE YEAR FROM NOW.